

Pillar III Disclosure Report including CSDR public disclosures Clearstream Banking S.A.

Disclosures as of 31 December 2022

Pillar III Disclosure Report including CSDR public disclosures Clearstream Banking S.A. -

Pillar III Disclosure Report of Clearstream Banking S.A., according to Part Eight of Regulation (EU) No 575/2013 (Capital Requirement Regulation, CRR) as amended by Regulation (EU) No 876/2019 (Capital Requirements Regulation II, CRRII) and, in conjunction with § 26a German Banking Act (Kreditwesengesetz, KWG), including public disclosures according to Articles 28 and 40 of Regulation (EU) No 2017/390 supplementing Regulation (EU) No 909/2014 (Central Securities Depositories Regulation, CSDR).

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Clearstream Banking S.A. is a Clearstream Holding AG company, which is a Deutsche Börse Group company.

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Foreword

The purpose of this document is to meet regulatory disclosure requirements, based on the revised Basel banking framework, known as “Basel III”. At the European Union (EU) level, the disclosure framework covers the Basel III requirements, and includes additional components as laid down by Directive 2013/36/EU (Capital Requirement Directive, CRD) as amended and Regulation (EU) No 575/2013 (Capital Requirements Regulation, CRR) as amended by Regulation (EU) No 876/2019 (Capital Requirements Regulation 2, CRR 2).

In addition, this document includes public disclosures on credit and liquidity risk management in accordance with Articles 28 and 40 of Regulation (EU) No 2017/390 supplementing Regulation (EU) No 909/2014 (Central Securities Depositories Regulation, CSDR).

Clearstream Banking S.A. (CBL) is a directly fully owned subsidiary of Clearstream Holding AG (CH), which is a financial holding company as defined in Article 4 Paragraph 1.20 CRR. Together with its subordinated companies, CH forms a financial holding Group under German law.

In application of Article 13(1) CRR EU parent institutions should comply with Part Eight CRR on consolidated basis. Consolidated disclosures of CH are available on the Clearstream website:

[Pillar III Disclosure Report \(clearstream.com\)](https://www.clearstream.com/eng/press-releases/2023/04/03/pillar-iii-disclosure-report)

Additionally, significant subsidiaries and the subsidiaries which are of significance for their local market are required to disclose information to the extent applicable in respect to own funds, capital requirements, countercyclical capital buffers, credit risk, remuneration policy, leverage ratio and liquidity requirements on an individual basis. CBL being designated as O-SII, it falls under the scope of individual disclosures.

Impact of current events on Clearstream Banking S.A.

Russia-Ukraine War

On 24 February 2022, Russia began a military invasion of Ukraine. Following the invasion, NATO allies led by the United States of America, the European Commission (EC), and G7 members, financial and non-financial sanctions were implemented against the government of the Russian Federation, the Central Bank of Russia, and Russian oligarchs and government officials. These developments impacted Clearstream Banking S.A. operations on the links to the Russian Federation on instruments issued by targets of sanctions. The daily Assets Under Custody (AUC), linked to these exposures, decreased significantly from 31 December 2021.

Clearstream Banking remains vigilant to be in compliance with the sanctions implemented in the EU and abroad, and Clearstream Banking S.A. remains well-capitalised in the event of a deterioration in the dynamic of the Russia-Ukraine war. In conclusion, no successful cyber-attacks stemming from the current situation have been observed against the Bank's infrastructure.

Disclosure Map

CRR requirement	Report chapter	Comment
TITLE I: GENERAL PRINCIPLES		
Article 431: Disclosure requirements and policies	Chapter 1.3	
Article 432: Non-material, proprietary or confidential information	Chapter 1.3	
Article 433: Frequency and scope of disclosures	Chapter 1.3	
Article 434: Means of disclosures	Chapter 1.3	
Article 434a: Uniform disclosure formats	EBA tables and templates mapping	
TITLE II: TECHNICAL CRITERIA ON TRANSPARENCY AND DISCLOSURE		
Article 435: Disclosure of risk management objectives and policies	Chapter 4	Voluntary. Full disclosure according to CRR and EBA ITS
Article 436: Disclosure of the scope of application	Chapter 1.4, Chapter 5	Voluntary. Full disclosure according to CRR and EBA ITS
Article 437: Disclosure of own funds	Chapter 6	Mandatory
Article 437a: Disclosure of own funds and eligible liabilities	Chapter 6	Voluntary. Full disclosure according to CRR and EBA ITS
Article 438: Disclosure of own funds requirements and risk-weighted exposure amounts	Chapter 6.4	Mandatory
Article 439: Disclosure of exposures to counterparty credit risk	Chapter 10.4.8	Voluntary. Full disclosure according to CRR and EBA ITS
Article 440: Disclosure of countercyclical capital buffers	Chapter 6.3	Mandatory
Article 441: Disclosure of indicators of global systemic importance	Not applicable as not G-SII	
Article 442: Disclosure of exposures to credit risk and dilution risk	Chapter 10	Mandatory
Article 443: Disclosure of encumbered and unencumbered assets	Chapter 8	Voluntary. Full disclosure according to CRR and EBA ITS
Article 444: Disclosure of the use of the Standardised Approach	Chapter 10.4.1	Voluntary. Full disclosure according to CRR and EBA ITS
Article 445: Disclosure of exposure to market risk	Chapter 12	Voluntary. Full disclosure according to CRR and EBA ITS
Article 446: Disclosure of operational risk management	Chapter 9	Voluntary. Full disclosure according to CRR and EBA ITS
Article 447: Disclosure of key metrics	Chapter 2	Voluntary. Full disclosure according to CRR and EBA ITS
Article 448: Disclosure of exposures to interest rate risk on positions not held in the trading book	Chapter 12.5.2	Voluntary. Full disclosure according to CRR and EBA ITS

Article 449: Disclosure of exposures to securitisation positions	Not applicable as no securitisation positions	
Article 449a: Disclosure of environmental, social and governance risks (ESG risks)	Chapter 13	Voluntary. Free format disclosure
Article 450: Disclosure of remuneration policy	Chapter 14	Mandatory
Article 451: Disclosure of the leverage ratio	Chapter 7	Mandatory
Article 451a: Disclosure of liquidity requirements	Chapter 11	Mandatory
TITLE III: QUALIFYING REQUIREMENTS FOR THE USE OF PARTICULAR INSTRUMENTS OR METHODOLOGIES		
Article 452: Disclosure of the use of the IRB Approach to credit risk	Not applicable as not used	
Article 453: Disclosure of the use of credit risk mitigation techniques	Chapter 10.4.4	Mandatory
Article 454: Disclosure of the use of the Advanced Measurement Approaches to operational risk	Chapter 9	Voluntary. Full disclosure according to CRR and EBA ITS
Article 455: Use of internal market risk models	Not applicable as not used	

EBA Tables & Templates

Disclosure	Template	CRR article	Report chapter
Disclosure of key metrics and overview of risk-weighted exposure amounts	EU OV1 – Overview of total risk exposure amounts	Article 438(d)	Chapter 6.4.1
	EU KM1 - Key metrics template	Article 447(a) to (g)	Chapter 2
	EU INS1 - Insurance participations EU INS2 - Financial conglomerates information on own funds and capital adequacy ratio	Article 438(b) Article 438(f) Article 438(g)	Not applicable Not applicable
	EU OVC - ICAAP information	Article 438(a) and (c)	Chapter 4.12
Disclosure of risk management policies and objectives	EU OVA - Institution risk management approach	Article 435(1)	Chapter 4
	EU OVB - Disclosure on governance arrangements	Article 435(2)	Chapter 3
Disclosure of the scope of application	EU LI1 - Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories	Article 436(c)	Chapter 5.1
	EU LI2 - Main sources of differences between regulatory exposure amounts and carrying values in financial statements	Article 436(d)	Chapter 5.1
	EU LI3 - Outline of the differences in the scopes of consolidation (entity by entity)	Article 436(b)	Chapter 5.1
	EU LIA - Explanations of differences between accounting and regulatory exposure amounts	Article 436(b) and (d)	Chapter 5.1
	EU LIB - Other qualitative information on the scope of application	Article 436(f), (g) and (h)	Not applicable
	EU PV1: Prudent valuation adjustments (PVA)	Article 436(e)	Not applicable
Disclosure of own funds	EU CC1 - Composition of regulatory own funds	Article 437(a), (d), (e) and (f)	Chapter 6.1
	EU CC2 - Reconciliation of regulatory own funds to balance sheet in the audited financial statements	Article 437(a)	Chapter 6.2
	EU CCA: Main features of regulatory own funds instruments and eligible liabilities instruments	Article 437(b) and (c)	Chapter 6.1.1
	EU CCyB1 - Geographical distribution of credit exposures	Article 440(a)	Chapter 6.3 Appendix A

Disclosure of countercyclical capital buffers	relevant for the calculation of the countercyclical buffer EU CCyB2 - Amount of institution-specific countercyclical capital buffer	Article 440(b)	Chapter 6.3
Disclosure of the leverage ratio	EU LR1 - LRSum: Summary reconciliation of accounting assets and leverage ratio exposures	Article 451(1)(b)	Chapter 7.1
	EU LR2 - LRCom: Leverage ratio common disclosure	Article 451(1)(a) and (b) Article 451(3)(a) and (b) Article 451(1)(c) Article 451(2)	Chapter 7.1
	EU LR3 - LRSpl: Split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures)	Article 451(1)(b)	Chapter 7.1
	EU LRA: Free format text boxes for disclosure on qualitative items	Article 451(1)(d) and (e)	Chapter 7.1
Disclosure of liquidity requirements	EU LIQA - Liquidity risk management	Article 435(1) Article 451a(4)	Chapter 11
	EU LIQ1 - Quantitative information of LCR	Article 451a(2)	Chapter 11.5.1
	EU LIQB on qualitative information on LCR, which complements template EU LIQ1	Article 451a(2)	Chapter 11.5.1
	EU LIQ2: Net Stable Funding Ratio	Article 451a(3)	Not applicable
Disclosure of credit risk quality	EU CRA: General qualitative information about credit risk	Article 435(1)(a), (b), (d) and (f)	Chapter 10
	EU CRB: Additional disclosure related to the credit quality of assets	Article 442(a) and (b)	Chapter 10.4.2
	EU CR1: Performing and non-performing exposures and related provisions	Article 442(c) and (f)	Chapter 10.4.2
	EU CR1-A: Maturity of exposures	Article 442(g)	Chapter 10.4.2
	EU CR2: Changes in the stock of non-performing loans and advances	Article 442(f)	Chapter 10.4.2
	EU CR2a: Changes in the stock of non-performing loans and advances and related net accumulated recoveries	Article 442(c) and (f)	Chapter 10.4.2
	EU CQ1: Credit quality of forborne exposures	Article 442(c)	Not applicable
	EU CQ2: Quality of forbearance	Article 442(c)	Not applicable
	EU CQ3: Credit quality of performing and non-performing exposures by past due days	Article 442(d)	Chapter 10.4.2

	EU CQ4: Quality of non-performing exposures by geography	Article 442(c) and (e)	Chapter 10.4.2 Appendix B
	EU CQ5: Credit quality of loans and advances by industry	Article 442(c) and (e)	Chapter 10.4.2
	EU CQ6: Collateral valuation - loans and advances	Article 442(c)	Chapter 10.4.2
	EU CQ7: Collateral obtained by taking possession and execution processes	Article 442(c)	Not applicable
	EU CQ8: Collateral obtained by taking possession and execution processes – vintage breakdown	Article 442(c)	Not applicable
Disclosure of the use of credit risk mitigation techniques	EU CRC – Qualitative disclosure requirements related to CRM techniques	Article 453(a) to (e)	Chapter 10.4.4
	EU CR3 – CRM techniques overview: Disclosure of the use of credit risk mitigation techniques	Article 453(f)	Chapter 10.4.4
Disclosure of the use of standardised approach	EU CRD – Qualitative disclosure requirements related to standardised model	Article 444(a) to (d)	Chapter 10.4.1
	EU CR4 – standardised approach – Credit risk exposure and CRM effects	Article 453(g), (h) and (i) Article 444(e)	Chapter 10.4.1
	EU CR5 – standardised approach	Article 444(e)	Chapter 10.4.1
Disclosure of the use of the IRB approach to credit risk	EU CRE – Qualitative disclosure requirements related to IRB approach	Article 452(a) to (f)	Not applicable
	EU CR6 – IRB approach – Credit risk exposures by exposure class and PD range	Article 452(g)(i)-(v)	Not applicable
	EU CR6-A – Scope of the use of IRB and SA approaches	Article 452(b)	Not applicable
	EU CR7 – IRB approach – Effect on the RWEAs of credit derivatives used as CRM techniques	Article 453(j)	Not applicable
	EU CR7-A – IRB approach – Disclosure of the extent of the use of CRM techniques	Article 453(g)	Not applicable
	EU CR8 – RWEA flow statements of credit risk exposures under the IRB approach	Article 438(h)	Not applicable
	EU CR9 –IRB approach – Back-testing of PD per exposure class (fixed PD scale)	Article 452(h)	Not applicable
	EU CR9.1 –IRB approach – Back-testing of PD per exposure class (only for PD estimates according to point (f) of Article 180(1) CRR)	Article 180(1)(f)	Not applicable

Disclosure of specialised lending	EU CR10 – Specialised lending and equity exposures under the simple risk weighted approach	Article 438(e)	Not applicable
Disclosure of exposures to counterparty credit risk	EU CCRA – Qualitative disclosure related to CCR EU CCR1 – Analysis of CCR exposure by approach EU CCR2 – Transactions subject to own funds requirements for CVA risk EU CCR3 – Standardised approach – CCR exposures by regulatory exposure class and risk weights EU CCR4 – IRB approach – CCR exposures by exposure class and PD scale EU CCR5 – Composition of collateral for CCR exposures EU CCR6 – Credit derivatives exposures EU CCR7 – RWEA flow statements of CCR exposures under the IMM EU CCR8 – Exposures to CCPs	Article 439(a) to (d) Article 439(f), (g), and (k) Article 439(h) Article 439(l) Article 444(e) Article 439(l) Article 452(g) Article 439(e) Article 439(j) Article 438(h) Article 439(i)	Chapter 10.4.8 Chapter 10.4.8.2 Chapter 10.4.8.2 Chapter 10.4.8.2 Not applicable Chapter 10.4.8.2 Not applicable Not applicable Chapter 10.4.8.2
Disclosure of exposures to securitisation positions	EU-SECA - Qualitative disclosure requirements related to securitisation exposures EU-SEC1 - Securitisation exposures in the non-trading book EU-SEC2 - Securitisation exposures in the trading book EU-SEC3 - Securitisation exposures in the non-trading book and associated regulatory capital requirements - institution acting as originator or as sponsor EU-SEC4 - Securitisation exposures in the non-trading book and associated regulatory capital requirements - institution acting as investor EU-SEC5 - Exposures securitised by the institution - Exposures in default and specific credit risk adjustments	Article 449(a) to (i) Article 449(j) Article 449(j) Article 449(k)(i) Article 449(k)(ii) Article 449(l)	Not applicable Not applicable Not applicable Not applicable Not applicable Not applicable
Disclosure of the use of standardised approach and internal model for market risk	EU MRA: Qualitative disclosure requirements related to market risk EU MR1 - Market risk under the standardised approach	Article 435(1) (a) to (d) Article 445	Chapter 12 Chapter 12.2

	EU MRB: Qualitative disclosure requirements for institutions using the internal Market Risk Models	Article 455(a), (b), (c), (f)	Not applicable
	EU MR2-A - Market risk under the internal Model Approach (IMA)	Article 455(e)	Not applicable
	EU MR2-B - RWA flow statements of market risk exposures under the IMA	Article 438(h)	Not applicable
	EU MR3 - IMA values for trading portfolios	Article 455(d)	Not applicable
	EU MR4 - Comparison of VaR estimates with gains/losses	Article 455(g)	Not applicable
Disclosure of operational risk	EU ORA - Qualitative information on operational risk	Articles 435(1), 446 and 454	Chapter 9
	EU OR1 - Operational risk own funds requirements and risk-weighted exposure amounts	Articles 446 and 454	Chapter 9.3
Disclosure of remuneration policy	EU REMA - Remuneration policy	Article 450(1) (a), (b), (c), (d), (e), (f), (j) and (k) Article 450(2)	Chapter 14.1 Remuneration policy
	EU REM1 - Remuneration awarded for the financial year	Article 450(1)(h)(i)-(ii)	Remuneration report Chapter 4.5
	EU REM2 - Special payments to staff whose professional activities have a material impact on institutions' risk profile (identified staff)	Article 450(1)(h)(v)-(vii)	Remuneration report Chapter 4.5
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Disclosure of encumbered and unencumbered assets	EU AE1 - Encumbered and unencumbered assets	Article 443	Chapter 8.1
	EU AE2 - Collateral received and own debt securities issued	Article 443	Chapter 8.1
	EU AE3 - Sources of encumbrance	Article 443	Chapter 8.1
	EU AE4 - Accompanying narrative information	Article 443	Chapter 8.1
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1. Introduction

1.1. Regulatory Framework

In December 2010, the Basel Committee on Banking Supervision published the global regulatory framework on minimum capital and liquidity requirements for banks, commonly known as Basel III, a set of standards aiming at strengthening the stability and resilience of the banking system.

The Basel framework consists of three mutually reinforcing pillars, as outlined below.

- Pillar I concerns the minimum quantitative (capital) requirements related to credit, operational and market risks.
- Pillar II requires banks to integrate the risks of Pillar I and further significant and substantial risks into integrated capital management and risk management considerations. Additionally, the interaction between the banks' own assessments and the banking supervisors' review is prescribed.
- Pillar III promotes market discipline through disclosure and thereby transparency to the public.

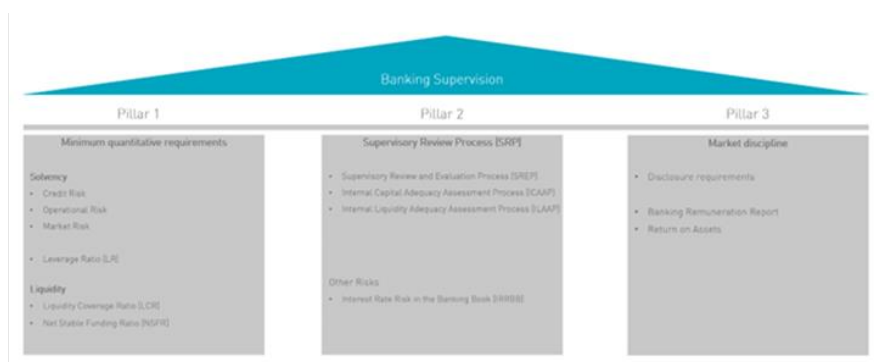


Figure 1: Overview regulatory framework

The Basel III standards were further enhanced through, among others, the revision of existing frameworks for assessing risk weighted assets (RWA) most notably through publication of the “Basel III: Finalising post-crisis reforms” in December 2017.

The first elements of the Basel III standards were implemented in European law by the Capital Requirements Regulation (EU) No 575/2013 (CRR) and the Capital Requirements Directive 2013/36/EU (CRD), generally applying since 2014. In May 2019, a revised prudential regulation package was adopted, further transposing the Basel III standards into European law through amending the CRR (through Regulation (EU) 2019/876 or CRR 2) and the CRD (through Directive (EU) 2019/878 or CRD 5).

In addition, the EU banking package published in May 2019 also contained a revised Banking Recovery and Resolution Directive (BRRD, amended as per Directive (EU) 2019/879 – BRRD2), reflecting changes related to legislation on the Minimum Requirement for own funds and Eligible Liabilities (MREL) and the Total Loss-Absorbing Capacity (TLAC) for global

systemically important institutions. Expect for dedicated exemptions, CRR 2 applies since 28 June 2021, whereas CRD 5 was transposed in Luxembourg law through the Law of 20 May 2021, which entered into force on 25 May 2021.

The EU rules deviate in some respects from the Basel III standards to take into account some European specificities. One key amendment is the introduction of the proportionality concept, which exempts small and non-complex institutions from certain obligations while subjecting large institutions to enhanced requirements. Furthermore, the adjustments consider specific activities and pass-through models not undertaking any significant maturity transformation, including activities conducted by CSDs. As such, CRR 2 contains important amendments from a CBL perspective.

According to Article 6(4) point (b) CRR, institutions authorised as CSDs according to Article 16 and point (a) of Article 54(2) CSDR are exempted from the Net Stable Funding Ratio (NSFR) on an individual basis. Similarly, exposures of CSDs authorised as credit institutions arising from banking type ancillary services offered to participants in a securities settlement system and holders of securities accounts, have been excluded from the total exposure measure of the Leverage Ratio according to point (o) of Article 429a (1) CRR, as those activities do not create a risk of excessive leverage.

With these exemptions, the impact of the regulatory requirements on Clearstream Banking S.A. was significantly reduced.

The Basel III standards are not yet fully transposed into European Law. To provide banks with greater operational capacities to react to the ongoing COVID-19 crisis, the Basel Committee on banking supervision deferred the implementation of the 2017 reforms, initially foreseen for 1 January 2022, by one year to 1 January 2023. With publication of three legislative proposals in October 2021 amending CRR, CRD as well as BRRD, the EU initiated the finalisation of the implementation of Basel III.

While the proposed introduction of the Output Floor limiting minimum capital requirements calculated with internal models to 72.5% of minimum capital requirements calculated with standardised approaches, is not expected to affect CBL, proposed changes relating to the use of the credit risk standardised approach, the calculation of capital requirements for operational risk and identification, management and disclosure of ESG risk will be respectively monitored closely to ensure timely and appropriate implementation. The legislative proposals currently foresee application of the newly introduced and amended requirements as of 1 January 2025.

In addition to the previously mentioned regulation and directive, this report considers the following regulatory publications:

- Commission Implementing Regulation (EU) 2021/637 of 15 March 2021 laying down implementing technical standards with regard to public disclosures by institutions of the information referred to in Titles II and III of Part Eight of Regulation (EU) No 575/2013 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) No 1423/2013, Commission Delegated Regulation (EU)

2015/1555, Commission Implementing Regulation (EU) 2016/200 and Commission Delegated Regulation (EU) 2017/2295.

- EBA/GL/2014/14 of 23 December 2014: Guidelines on materiality, proprietary and confidentiality and on disclosure frequency under Article 432(1), 432(2) and 433 of Regulation (EU) No 575/2013.
- EBA/GL/2016/11 of 14 December 2016: Guidelines on disclosure requirements under Part Eight of Regulation (EU) No 575/2013.
- EBA/GL/2017/01 of 21 June 2017: Guidelines on LCR disclosure to complement the disclosure of liquidity risk management under Article 435 of Regulation (EU) No 575/2013.
- EBA/GL/2018/01 of 16 January 2018: Guidelines on uniform disclosures under Article 473a of Regulation (EU) No 575/2013 as regards the transitional period for mitigating the impact of the introduction of IFRS 9 on own funds.
- EBA/GL/2021/05: Final Report on Guidelines on internal governance under Directive 2013/36/EU.
- EBA/GL/2021/04: Final Report on Guidelines on sound remuneration policies under Directive 2013/36/EU.
- ESMA (ESMA/36-36-2319) and EBA (EBA/GL/2021/06): Guidelines on the assessment of the suitability of members of the management body and key function holders.
- CSSF Circular 17/673 referring to Guidelines on Disclosure Requirements under part eight of Regulation (EU) of 14 December 2016 as amended on 9 June 2017.
- CSSF Circular 18/676 referring to Guidelines on LCR Disclosure to complement the disclosure of Liquidity Risk Management under Article 435 of Regulation (EU) No 575/2013 and EBA/GL/2017/01 of 8 March 2017.
- CSSF Circular 18/687 Adoption of the EBA Guidelines on uniform disclosures under Article 473a of Regulation (EU) No 575/2013 as regards the transitional period for mitigating the impact of the introduction of IFRS 9 on own funds (EBA/GL/2018/01).

In the following, the respective laws and regulations in place as of 31 December 2022 are referred to, if not stated otherwise.

1.2. Objective of the report

The objective of this Disclosure Report is to fulfil the disclosure requirements detailed in Part Eight CRR and CRR 2 and Article 38 of the Luxembourg Law of 5 April 1993 (“Luxembourg Banking Act”), at the legal entity level of CBL. More specifically, the report intends to provide a detailed overview on the Bank’s:

- Legal structure;
- Capital structure;
- Risk management framework including governance arrangements, risk management methodology and risk reporting; and
- Risk management in terms of identified risk types.

1.3. Disclosure Policy and frequency

With exemption of disclosures laid down in point (c) of Articles 435(2) and 437 CRR, disclosure content can be omitted according to Article 432 CRR and relating EBA Guideline 2014/14 if the information is non-material, proprietary or confidential. To ensure adequate

application of the disclosure requirements a Disclosure Policy has been established, which is reviewed and adapted, where necessary, on a yearly basis. The Executive Board of CBL is ultimately responsible for the Disclosure Policy and must approve any material changes to the policy. Further, the Disclosure Policy defines disclosure content, allocates responsibilities, and defines processes.

In line with the Disclosure Policy, a dedicated process must be followed if CBL considers omitting certain disclosures due to these disclosures being immaterial, proprietary or confidential. Where the Bank classifies information as non-material in this report, this has been stated accordingly in the related disclosures.

In accordance with Article 434 CRR, CBL publishes its Disclosure Report on the website:

[Pillar III Disclosure Report \(clearstream.com\)](https://www.clearstream.com/Regulation-1-remuneration-information)

The report is updated once a year, whereas in line with Article 433a CRR dedicated information is disclosed on a semi-annual or quarterly basis as required. In addition to the Pillar III report, the following documents are also made available:

- A remuneration report and remuneration policy that fulfil the requirements according to Article 450 CRR.

That report is disclosed by year on the website of Clearstream Group:

www.clearstream.com/clearstream-en/about-clearstream/regulation-1-remuneration-information.

The remuneration policy is also publicly available under the following [link](#).

Information about the return on assets (RoA) according to Article 38-4 of the Luxembourg Banking Act is disclosed by CBL under Note 9.3 in the notes to its financial statements, which are published in the Luxembourg Trade and Companies Register (“Registre de Commerce et des Sociétés”).

1.4. Scope of Application (Article 436 CRR)

Throughout the Pillar III Disclosure Report, as of 31 December 2022 CBL had one (dormant) subsidiary namely [Clearstream London Limited \(CLL\)](#) and three branches: [London](#), [Singapore](#), and [Japan](#). However, on grounds of non-materiality these are not consolidated for accounting purposes and CBL has also been exempted of consolidation for regulatory reporting purposes.

As such, this Disclosure Report covers Clearstream Banking S.A. with mention of the subsidiary and branches described in [1.6. Business Operations](#).

All disclosed information is reported in CBL’s accounting and reporting currency, Euro, if not otherwise specified.

1.4.1. Clearstream Banking S.A.

Clearstream Banking S.A. (“CBL”) was founded in 1970 in Luxembourg and has its registered office at 42 Avenue J.F. Kennedy, L-1855 Luxembourg.

CBL is classified as a public limited company (Société Anonyme). It is governed by its Articles of Incorporation and Luxembourg company law.

1.5. Corporate Structure

As of 31 December 2022, the Bank was directly fully owned by Clearstream Holding AG (“CHAG”). CHAG is itself directly fully owned by Deutsche Börse AG, the ultimate parent company. The ownership structure of CBL as part of Deutsche Börse Group (“DBG”) is shown below.

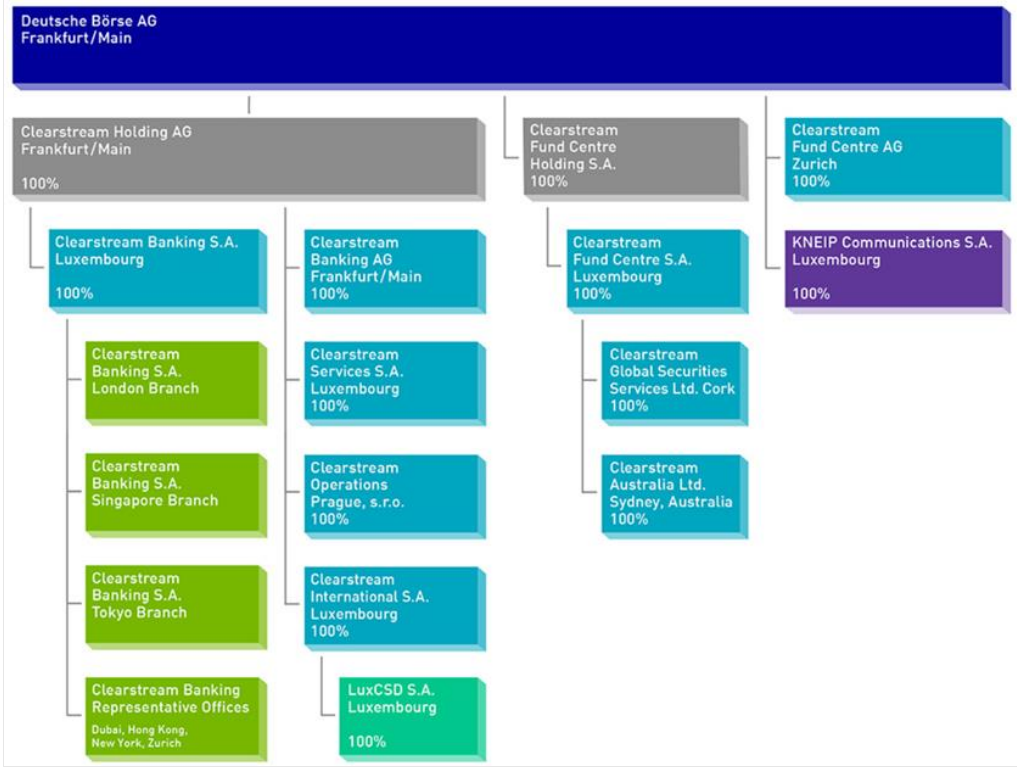


Figure 2: Overview corporate structure

1.6. Business Operations

CBL acts as an International Central Securities Depository (ICSD) which provides settlement and custody services for international securities.

These services include:

- Delivery versus payment and delivery free of payment settlement transactions;
- Comprehensive custody management;
- Value-added services, such as securities lending, collateral management etc.; and
- Transactional information distribution.

Further services offered by the Bank include the issuance of securities, Investment Funds Services and Global Securities Financing, consisting of securities lending as well as collateral management services. In addition, CBL provides operative treasury services for Clearstream Banking AG (“CBF”).

Additionally, CBL applied for authorisation as CSD according to Article 16 including providing banking-type ancillary services according to Article 54 Paragraph (2) lit. (a) of Regulation (EU) No 909/2014 (“Central Securities Depositories Regulation”, “CSDR”).

CBL holds the following branches/participations:

1.6.1. Clearstream London Limited (“CLL”) (dormant as of 31 December 2022)

CBL submitted a compliant application to the UK’s Financial Conduct Authority (FCA) in relation to the temporary recognition regime for non-UK EEA banking branches before the original 25 March 2019 deadline. This allows the Bank to continue providing services to its UK and international clients until the landing slot process for permanent authorisation has been published. To this end, Clearstream London Limited (CLL), a new fully owned subsidiary of CBL was incorporated on 27 December 2018 and duly authorised as an Article 3 MiFID exempt firm by the FCA on 31 January 2020, albeit with dormant permissions at the current time. Following the agreement with the FCA, CLL is planned to be activated on 1 July 2023. CLL filed in October 2022 a Variation of Permission (VOP) to request FCA to approve CLL’s activation. As at 31 December 2022, the VOP is under FCA’s review processes.

1.6.2. CBL Singapore branch (“CBS”)

CBS is a branch of CBL and its first operational centre outside Europe. In November 2009, CBL obtained a banking licence, which has been updated in October 2017. CBL’s products and services, including Global Securities Financing and Issuance and Distribution, are offered locally to clients in the Asia-Pacific region.

1.6.3. CBL London branch (“CBLUK”)

In January 2016, Clearstream transformed its representative office in London into a fully-fledged branch, which took over the activities of the representative office. In conjunction with Brexit, on December 2022 the CBL London branch began operating under FCA and PRA’s Temporary Permissions Regime (TPR) meaning it has been able continue its pre-Brexit activities effectively under its existing license for a limited period of time.

1.6.4. Clearstream Banking Tokyo branch (“CBJ”)

At the beginning of 2022, a branch licence was granted to CBJ, thus becoming a branch fully owned by Clearstream Banking S.A. The purpose of establishing a branch is to further fortify the presence of the Bank and ensure a solid regulatory environment by enabling a transparent, long-term business position in Japan.

1.7. Regulatory Supervision

Commission de Surveillance du Secteur Financier (“CSSF”) is the competent authority for the supervision of CBL as a credit institution according to Article 42 and 43 of the Luxembourg Banking Act. Furthermore, Banque Centrale du Luxembourg (“BCL”) has a shared responsibility for liquidity supervision on the basis of Article 2(4) of the Law of 23 December 1998 concerning the monetary status.

Moreover, CBL is subject to regulatory supervision in relation to the securities settlement system (“SSS”) according to Title V of the Luxembourg Law of 10 November 2009 relating to payment services. BCL is responsible for the oversight of SSSs, as per Article 110 of the Law of 10 November 2009. The oversight focuses on the operational and financial stability of each system individually, the participants in such systems as well as the stability of the financial system as a whole. Furthermore, specific regulations for SSSs must be considered (for example, circulars BCL 2001/163 and 2001/168).

Additionally, being authorised in accordance with Article 16 and Article 54 Paragraph (2) lit. a of Regulation (EU) No 909/2014 (CSDR), CSSF acts also as the designated competent authority carrying out the duties under CSDR for the supervision of CBL in accordance with Article 11 CSDR.

As of 1 January 2018, CBL is classified as Other Systemically Important Institution (“O-SII”) as per CSSF Regulation N° 18-06 since the competent authorities comply with the EBA Guidelines 2014/10 on criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions. Due to its classification as an O-SII, CBL must produce a stand-alone Pillar III disclosure report. This classification was reconfirmed in January 2022.

CHAG as the superordinate company of the financial holding group according to §10a (1) of the German Banking Act (KWG) as well as being approved as financial holding company in accordance with Article 21 CRD, is responsible for fulfilling the regulatory obligations on a consolidated/Group level vis-à-vis the German supervisory authorities and presents a Pillar III report in compliance with the disclosure requirements pursuant to Part Eight CRR and § 26a KWG.

2. Key prudential metrics

As outlined in Article 433c(2)(e), and Article 447 CRR, CBL discloses its data on own funds, risk-weighted exposures, capital ratios, leverage ratios, and liquidity coverage using template EU KM1. Disclosure periods T, T-1, T-2, T-3 and T-4 are defined as quarterly periods and shall be populated depending on the frequency set by Articles 433a, 433b and 433c CRR. Institutions disclosing the information in this template on a semi-annual basis shall provide data for periods T, T-2 and T-4. Consequently, for the annual report 2022, CBL discloses the information for 31 December 2022, 30 June 2022 and 31 December 2021.

(in 000 of €)		T	T-1	T-2	T-3	T-4
		31/12/2022		30/06/2022		31/12/2021
Available own funds (amounts)						
1	Common Equity Tier 1 (CET1) capital	1,008,281		1,222,226		1,214,206
2	Tier 1 capital	1,008,281		1,222,226		1,214,206
3	Total capital	1,008,281		1,222,226		1,214,206
Risk-weighted exposure amounts						
4	Total risk exposure amount	3,498,887		4,351,567		4,037,268
Capital ratios (as a percentage of risk-weighted exposure amount)						
5	Common Equity Tier 1 ratio (%)	28.82%		28.09%		30.07%
6	Tier 1 ratio (%)	28.82%		28.09%		30.07%
7	Total capital ratio (%)	28.82%		28.09%		30.07%
Additional own funds requirements to address risks other than the risk of excessive leverage (as a percentage of risk-weighted exposure amount)						
EU 7a	Additional own funds requirements to address risks other than the risk of excessive leverage (%)	0.50%		1.00%		1.00%
EU 7b	of which: to be made up of CET1 capital (percentage points)	0.28%		1.00%		1.00%
EU 7c	of which: to be made up of Tier 1 capital (percentage points)	0.37%		1.00%		1.00%
EU 7d	Total SREP own funds requirements (%)	8.50%		9.00%		9.00%
Combined buffer and overall capital requirement (as a percentage of risk-weighted exposure amount)						
8	Capital conservation buffer (%)	2.50%		2.50%		2.50%
EU 8a	Conservation buffer due to macro-prudential or systemic risk identified at the level of a Member State (%)	0.00%		0.00%		0.00%
9	Institution specific countercyclical capital buffer (%)	0.14%		0.07%		0.05%
EU 9a	Systemic risk buffer (%)	0.00%		0.00%		0.00%
10	Global Systemically Important Institution buffer (%)	0.00%		0.00%		0.00%
EU 10a	Other Systemically Important Institution buffer (%)	0.50%		0.50%		0.50%
11	Combined buffer requirement (%)	3.14%		3.07%		3.05%
EU 11a	Overall capital requirements (%)	11.64%		12.07%		12.05%
12	CET1 available after meeting the total SREP own funds requirements (%)	20.54%		19.09%		21.07%
Leverage ratio						

13	Total exposure measure	4,085,331		5,002,800		4,503,574
14	Leverage ratio [%]	24.68%		24.43%		26.96%
Additional own funds requirements to address the risk of excessive leverage (as a percentage of total exposure measure)						
EU 14a	Additional own funds requirements to address the risk of excessive leverage [%]	n/a		n/a		n/a
EU 14b	of which: to be made up of CET1 capital (percentage points)	n/a		n/a		n/a
EU 14c	Total SREP leverage ratio requirements [%]	3.00%		3.00%		3.00%
Leverage ratio buffer and overall leverage ratio requirement (as a percentage of total exposure measure)						
EU 14d	Leverage ratio buffer requirement [%]	0.00%		0.00%		0.00%
EU 14e	Overall leverage ratio requirement [%]	3.00%		3.00%		3.00%
Liquidity Coverage Ratio						
15	Total high-quality liquid assets (HQLA) (Weighted value -average)	18,917,693		16,642,841		14,369,126
EU 16a	Cash outflows - Total weighted value	18,677,759		15,756,405		14,010,879
EU 16b	Cash inflows - Total weighted value	1,969,713		1,607,633		2,081,076
16	Total net cash outflows (adjusted value)	16,708,046		14,148,772		11,929,803
17	Liquidity coverage ratio [%]	113.23%		117.63%		120.45%
Net Stable Funding Ratio						
18	Total available stable funding	n/a		n/a		n/a
19	Total required stable funding	n/a		n/a		n/a
20	NSFR ratio [%]	n/a		n/a		n/a

Template EU KM1 - Key metrics

The detailed information on the metrics and their evolution is available in relevant chapters:

- Available own funds – [Chapters 6.1](#) and [6.2](#);
- Risk weighted exposure amounts – [Chapter 6.4](#);
- Countercyclical capital buffer – [Chapter 6.3](#);
- Leverage ratio – [Chapter 7](#);
- Liquidity coverage ratio – [Chapter 11.5.1.1](#);
- Net stable funding ratio exemption – [Chapter 11.5.1.2](#).

As an O-SII CBL is subject to additional buffer requirement of 0.5%.

Further to the provisions of Article 59-5 of the Law of 5 Avril 1993 on the financial sector, CBL is subject to additional capital requirement equal to 2.5% of total risk exposure amount (TREA) corresponding to the capital conservation buffer.

Within its supervisory review and evaluation process (SREP) in 2019, further to Article 28(1) of CSSF Regulation 15-02, the CSSF has concluded that, in excess of the requirements specified in Article 92 CRR, CBL is required to maintain the additional own funds equal to 1% of TREA, of which 100% CET1 capital. In its letter dated 4 August 2022 the CSSF confirmed the reduction of this requirement to 0.5% of TREA, to be held in the form of 56,25% CET1 capital and 75% of Tier 1 capital as a minimum.

There is no additional requirement for the risk of excessive leverage.

3. Governance arrangements

Institutions shall disclose the information referred to in Article 435(2) CRR with regard to the governance arrangements using EU OVB template below. To facilitate the reading the relevant information is provided as free text in the following chapters.

Legal basis	Row number	Free format	Disclosure chapter
Point (a) of Article 435(2) CRR	(a)	The number of directorships held by members of the management body.	Chapter 3.2, Chapter 3.3
Point (b) of Article 435(2) CRR	(b)	Information regarding the recruitment policy for the selection of members of the management body and their actual knowledge, skills and expertise.	Chapter 3.2, Chapter 3.3
Point (c) of Article 435(2) CRR	(c)	Information on the diversity policy with regard of the members of the management body.	Chapter 3.1
Point (d) of Article 435(2) CRR	(d)	Information whether or not the institution has set up a separate risk committee and the frequency of the meetings.	Chapter 3.3.2
Point (e) Article 435(2) CRR	(e)	Description on the information flow on risk to the management body.	Chapter 4

Table EU OVB - Disclosure on governance arrangements

3.1. General Arrangements

Clearstream Banking S.A. is incorporated in Luxembourg in the form of a public limited company (Société Anonyme). According to its Articles of Incorporation, Clearstream Banking S.A. has an Executive and a Supervisory Board. The members of the Executive Board and the Supervisory Board conduct the business of the Company in accordance with all applicable laws and regulations, notably the Law of 10 August 1915 on commercial companies, as amended, as well as the Law of 5 April 1993 on the financial sector, as amended, CSSF circulars, notably the CSSF Circular 12/552, as amended, the relevant EU framework, notably the Central Securities Depositories Regulation (CSDR) including its implementing acts, the Articles of Incorporation, the Rules of Procedure of the Supervisory Board, and the Rules of Procedure of the Executive Board.

Clearstream Banking S.A. maintains a comprehensive suitability assessment policy and a corresponding side-letter defining specific job descriptions of Supervisory Board and Executive Board members. The objective of this policy is to ensure that members of the Executive Board of CBL, the members of the Supervisory Board and key function holders of CBL are suitable in terms of reputation, experience and governance criteria, as stipulated in the joint ESMA and EBA "Guidelines on the assessment of the suitability of members of the management body and key function holders under Directive 2013/36/EU and Directive 2014/65/EU" (EBA/GL/2017/12/ESMA71-99-598) as well as in the Luxembourg Banking Act and Central Securities Depositories Regulation ("CSDR").

In addition to the suitability assessment policy, CBL has defined several diversity principles that govern the selection of Executive Board and Supervisory Board members. The principles, listed below in detail, refer to educational and professional background, gender,

age and geographical provenance with the aim to achieve a variety of views and experiences and to facilitate independent opinions within the Executive Board and the Supervisory Board:

- CBL aims to achieve a balance representation of women and men;
- The age structure of the Boards should be of an appropriately broad range;
- An appropriately broad range of education and professional backgrounds should be present in the Boards; and
- The composition of the Boards should reflect CBL's international profile.

The suitability assessment is initiated when it is intended to appoint or elect a new member of the Executive Board or the Supervisory Board, if a member resigns from the mandate causing material changes to the composition of the management body, in the event of any material changes (for example, reduction of work time, change regarding the scope or nature of the mandate or negative event with regard to the reputation) and on a regular basis, at least once a year.

To benefit from a balanced gender diversity and to fulfil the requirement of Article 27(4) of the Regulation (EU) No 909/2014 the Supervisory Board of Clearstream Banking S.A. has approved the Gender Diversity Policy as [published on Clearstream's website](#) and decided on a target to increase the number of the under-represented gender in the management body.

The members of the Supervisory Board of Clearstream Banking S.A. agreed on the proposed 20% target quota for the representation of the under-represented gender (currently female) in both the Supervisory Board and the Executive Board by 31 December 2026.

From 2018, the rules of the limitation of mandates in accordance with Article 38-2 of the Luxembourg Banking Act must be complied with. Under this definition, and in consideration of the legal permissibility of the aggregation of mandates, on 31 December 2022 all members of the Executive Board and the Supervisory Board of CBL complied with these rules.

In the following paragraphs, the composition of all boards and committees is reflected as at the end of the reporting period, being 31 December 2022.

3.2. Supervisory Board

According to the Articles of Incorporation of CBL, the Supervisory Board consists of at least three (3) members. The members of the Supervisory Board are required to fulfil certain criteria, as laid down in the Suitability Assessment Policy, and to comply with regulatory requirements, as set out in the section above. Furthermore, the Supervisory Board in its entirety must have the necessary skills, capabilities, and experience to supervise and control the Executive Board of CBL. This requires understanding of the business of a credit institution/central securities depository. Such criteria include but are not limited to: Members of the management body should have an up-to-date understanding of the business, of the Bank and its risks. The assessment of a member's knowledge, skills and experience

should consider both the theoretical experience attained through education and training and the practical experience gained in previous occupations.

A member of the management body should be considered to be of good repute, honesty, and integrity if there are no objective and demonstrable grounds to suggest otherwise, and no reason to have reasonable doubt about his or her good repute, honesty and integrity.

The Nomination Committee prepares a job description and a candidate profile for a specific position, which is resolved by the Supervisory Board. Subsequently, the Nomination Committee identifies and recommends suitable candidates, who are sent for approval to the General Meeting of Shareholders. Following selection and nomination, Boards and Committees Clearstream prepares the formal decision of the General Meeting of Shareholders to appoint the candidate as new member. The appointments of members to the Supervisory Board require prior express approval by the competent authority (CSSF).

On 31 December 2022, the Supervisory Board consisted of the persons displayed in Table 2, which also discloses the number of directorships held by each member as required by Article 435(2) of CRR 2.

In 2022, no new directorships were approved by the competent authorities. The Supervisory Board typically meets four (4) times per year, with additional meetings possible at the discretion of the Chairman. In these meetings, it is informed about normal business activities as well as all substantial business events. In the event of extraordinary incidents, the CBL Supervisory Board is informed immediately.

Name – position	Number of directorships
Stephan Leithner – Chairman	9
Gregor Pottmeyer – Vice Chairman	5
Oliver Engels	3
Stephanie Eckermann	7
Wolfgang Gaertner	2
Marie-Jeanne Chevremont	6

Table 1: Supervisory Board Members

3.3. Executive Board

According to CBL’s Articles of Incorporation, the Executive Board shall be composed of at least three (3) members who are appointed by the Supervisory Board of CBL for a period of four (4) years. The Executive Board is chaired by the CEO.

The recruitment process of members of the Executive Board starts with the Nomination Committee to prepare the process, and the Supervisory Board to resolve on a job description and candidate profile for a specific position. Afterwards, the Nomination Committee identifies and recommends suitable members for the approval to the Supervisory Board. After the selection and nomination of a candidate, Boards & Committees Clearstream prepares a formal decision of the Supervisory Board. The appointment of new members of the Executive Board of CBL requires prior approval by the CSSF.

The Executive Board is responsible for managing CBL in accordance with the applicable laws, the Articles of Association, and its internal rules and regulations with the objective of creating sustainable value in the interest of the Company, and taking into consideration the interests of the shareholders, employees and other stakeholders. The Executive Board is responsible for establishing a proper business organisation, encompassing appropriate and effective risk management.

The members of the Executive Board must be professionally suitable and reliable for the management of a credit institution and central securities depository and they must be able to devote sufficient time to fulfil their tasks. Further, sufficient theoretical and practical knowledge of the business of a central securities depository/credit institution is required from all members of the Executive Board. In addition, the members of the Executive Board must have:

- An understanding of banking and financial markets, especially within the regulatory framework;
- An understanding of managing credit institutions; and
- Sufficient experience in managerial positions.

The business distribution scheme regulates the allocation of tasks and responsibilities between the Board members. Nevertheless, the Executive Board remains collectively responsible for the fulfilment of the duties as defined by law and set out in the Articles of Incorporation (overall responsibility).

3.3.1. Frequency of Meetings

Meetings of the Executive Board are held twice monthly or more frequently if required.

On 31 December 2022, the Executive Board consisted of the persons displayed in Table X, which also discloses the number of directorships held by each member, as required by Article 435(2) CRR.

Name – position	Number of directorships
Philip Brown – Chief Executive Officer	5
João Amaral	1
Alain Courbebaisse	1
Anne-Pascale Malréchauffé	4

Name – position	Number of directorships
Denis Schloremberg	2
Guido Wille	2

Table 2: Executive Board Members

3.3.2. Committees

In 2021, the CBL Supervisory Board Committees comprised the Audit Committee, Risk Committee, Nomination Committee and Remuneration Committee. All four committees have three members each and the Audit Committee is chaired by an independent member of the Supervisory Board.

3.3.2.1. Audit Committee

Members	Tasks and responsibilities
<ul style="list-style-type: none"> • Marie-Jeanne Chevremont – Chairperson • Wolfgang Gaertner – Vice Chairperson • Stephanie Eckermann 	<ul style="list-style-type: none"> • Monitors accounting and financial reporting processes; • Monitors the effectiveness of the risk management process, in particular, the Internal Control System (ICS), the risk management system and internal audit; • Monitors the execution of audits, in particular, in relation to the selection and independence of the auditor and the services provided by the auditor (for example, scope, frequency or reports); and • Submits recommendations to the Supervisory Board to ensure the integrity of the reporting and accounting processes.

3.3.2.2. Nomination Committee

Members	Tasks and responsibilities
<ul style="list-style-type: none"> • Wolfgang Gaertner – Chairperson • Stephan Leithner • Marie-Jeanne Chevremont 	<ul style="list-style-type: none"> • Identifies, recommends and promotes, for the approval of the Supervisory Board (SB) and General Meeting of Shareholders, candidates to fill vacancies in the Executive Board (EB) and SB, with the objective to reach a balance and diversity of knowledge, skills and experience, as well as

Members	Tasks and responsibilities
	<p>gender diversity amongst the respective members;</p> <ul style="list-style-type: none"> • Periodically assesses the general structure and performance of EB and SB and provides related recommendations to the SB for improvements; and • Assesses the knowledge, skills, and experience of respective boards, on an individual and collective basis.

3.3.2.3. Remuneration Committee

Members	Tasks and responsibilities
<ul style="list-style-type: none"> ▪ Stephan Leithner – Chairperson ▪ Gregor Pottmeyer – Vice Chairperson ▪ Wolfgang Gaertner 	<ul style="list-style-type: none"> ▪ Supervises the reasonableness of the remuneration system of executive management members. In particular, it supervises the appropriateness of the compensation of the Head of the risk function and of the compliance function as well as employees having a substantial influence on the overall risk profile of the institution. It also supports the Supervisory Board in monitoring the reasonableness of the remuneration system of employees as well as the institution. At the same time, it assesses the impacts of the remuneration system on the risk, capital, and liquidity management; and, ▪ Supports the Supervisory Board in overseeing the internal control system and all other relevant areas in the structuring of the remuneration system

3.3.2.4. Risk Committee

Members	Tasks and responsibilities
<ul style="list-style-type: none"> • Oliver Engels – Chairman • Stephan Leithner – Vice Chairman • Stephanie Eckermann 	<ul style="list-style-type: none"> • Advises the Supervisory Board on the institution’s overall current and future risk appetite, risk tolerance and risk strategy and assists the Supervisory Board in overseeing the implementation of that strategy; • Reviews whether the conditions offered to clients take into account the institution’s business model and risk structure. If this is not the case, the Risk Committee submits proposals to the Executive Board, about how the conditions applied to clients in accordance with the business model and the risk structure could be created; • Examines whether incentives provided by the remuneration system take into consideration the risk, capital and liquidity structure of the institution and the likelihood and timing of earnings; and • Takes advice from external experts, if necessary. It determines type, comprehensiveness, format and frequency of information to be provided by the Executive Board with regard to strategy and risk.

3.3.2.5. User committee

Members	Tasks and responsibilities
<ul style="list-style-type: none"> • European Investment Bank • Bank of New York Mellon • Citibank • BNP Paribas Securities Services • Union Bank of Switzerland • Barclays • Northern Trust 	<ul style="list-style-type: none"> • Submits non-binding opinions to the management body; and • Advises the Executive Board on key arrangements that may affect its members, including the criteria for accepting issuers or clients in their respective securities settlement systems and at the service level and the pricing structure.

4. Risk management overview

In application of Article 435(1) CRR the qualitative information on risk management in CBL is disclosed using guidance for template EU OVA below in the following chapters:

Legal basis	Row number	Qualitative information - Free format	Report chapter
Point (f) of Article 435(1) CRR	(a)	Disclosure of concise risk statement approved by the management body	Chapter 4.1
Point (b) of Article 435(1) CRR	(b)	Information on the risk governance structure for each type of risk	Chapter 4 Chapter 9 Chapter 10 Chapter 11 Chapter 12
Point (e) of Article 435(1) CRR	(c)	Declaration approved by the management body on the adequacy of the risk management arrangements.	Chapter 4.4 Chapter 4.12
Point (c) of Article 435(1) CRR	(d)	Disclosure on the scope and nature of risk disclosure and/or measurement systems.	Chapter 4
Point (c) of Article 435(1) CRR	(e)	Disclose information on the main features of risk disclosure and measurement systems.	Chapter 4.3
Point (a) of Article 435(1) CRR	(f)	Strategies and processes to manage risks for each separate category of risk.	Chapter 4.9
Points (a) and (d) of Article 435(1) CRR	(g)	Information on the strategies and processes to manage, hedge and mitigate risks, as well as on the monitoring of the effectiveness of hedges and mitigants.	Chapter 4.10

Table EU OVA - Institution risk management approach

4.1. Concise Risk Statement

In the application of point (f) of Article 435(1) CRR CBL Executive Board, in the executive board meeting on 6 April 2023 approved the below concise risk statement.

Article 435(1)(f) CRR requirements	Reference sections
Risk profile	4.13 Risk profile
Strategy	4.3 Risk strategy 4.5 Risk culture
Management of risk	4.2 Risk management framework 4.6. Risk management process 4.7 Risk identification 4.8 Risk notification 4.9 Risk assessment 4.10 Risk mitigation and control 4.11 Risk monitoring and reporting 9 Operational risk 10 Credit risk 11. Liquidity risk 12. Market risk
Risk tolerances	4.9 Risk assessment

Key ratios and figures	2 Key prudential metrics
	6 Own funds and capital
	7 Leverage ratio
	8 Assets encumbrance
	9 Operational risk
	10 Credit risk
	11 Liquidity risk
	12 Market risk

Table 3: Concise risk statement

CBL doesn't have any transactions within the group, with affiliates and related parties, that have material impact on its risk profile.

4.2. Risk Management Framework (Article 435(1) CRR)

Risk management is a fundamental component of the Bank's management and control framework. Effective and efficient risk management is vital to protect the Bank's interests and simultaneously enables Clearstream to achieve its corporate goals. Clearstream has therefore established a Group-wide risk management system comprising roles, processes and responsibilities applicable to all employees and organisational units of Clearstream. This ensures that emerging risks are identified and managed as early as possible.

In addition, Clearstream's risk strategy is based upon the business strategy and regulates the extent of risks taken throughout the various business activities carried out. This is ensured by determining conditions for risk management, control and limitation. As a result, Clearstream gives considerable attention to its risk mitigation process and ensures that appropriate measures are taken to avoid, reduce and transfer risk or, to intentionally accept it. Thus, timely and adequate control of risk must be ensured.

Information required for controlling risk is assessed using structured and consistent methods and processes. The results are collated and incorporated into a reporting system enabling measurement and control of risks. Consequently, risk reporting is based on reliable information and carried out on a regular basis and ad hoc, if necessary.

All members of the Executive Board of Clearstream are ultimately responsible for the risk strategy, which reflects Clearstream's risk appetite defining the maximum loss the Executive Board is willing to assume in one year, the risk tolerance as well as desired performance levels. It is Clearstream's intention to maintain risk at an appropriate and acceptable level. Moreover, the members of the Executive Board ensure that the risk strategy is integrated into the business activities throughout the entire Group and that adequate measures are in place to implement the strategies, policies and procedures. The risk strategy implementation is outlined below.

4.3. Risk Strategy

Based on its business strategy, Clearstream has adopted a corresponding risk strategy which describes the overall risk profile. The risk strategy includes statements concerning risk appetite and sets limits to the Risk-Bearing Capacity per risk type. Required Economic

Capital is compared with the available Risk-Bearing Capacity which is defined as regulatory own funds (eligible regulatory capital) minus adjustments for unrealised losses driven mainly by ongoing litigations, for non-consolidated entities as well as for potential further reasons. The allocation of Risk-Bearing Capacity for 2022 for Clearstream was as follows: Operational Risk max 41%, Financial Risk max 52%, Business Risk max 6% and Pension Risk max 1%.

The risk strategy was approved by the Executive Board of Clearstream in October 2022. The overall risk profile as defined, adopted, and approved via the risk strategy links to the business strategy outlined above. The main part consists of the risk strategy statement, the risk management approach and risk types which are quantified in the risk appetite framework based on tools and concepts used to manage risk. Those tools and concepts include Risk-Bearing Capacity and Value at Risk. Other tools, while critical and important, are in addition to these two concepts.

4.4. Adequacy of risk management arrangements (Article 435(1)(e) CRR)

For the purpose of Article 435 CRR, in the Executive Board meeting on 10 March 2023 the Executive Board concluded that the Risk Management System is effective and adequate with regard to risk profile and strategy of the Bank.

4.5. Risk Culture

At Clearstream, a risk awareness and a corresponding risk-conscious culture is encouraged through appropriate organisational structures and responsibilities, adequate processes and the knowledge of employees. The appropriateness of the Bank's risk management and controlling systems are regularly checked. Overall, Clearstream's risk culture is based on the Financial Stability Board's four indicators of a sound risk culture: Tone from the top, accountability, effective communication and challenge and incentives, thereby striving for clear risk ownership and accountability.

4.6. Risk Management Process

Overall, the risk management process aims at ensuring that all threats, causes of loss and potential disruptions are:

- Properly identified, as soon as possible;
- Centrally recorded;
- Assessed (that is, quantified in financial terms to the largest possible extent);
- Controlled; and,
- Reported in a timely and consistent manner, together with suitable recommendations to the respective Executive Board.

These five key elements, as well as adequate quality standards, are defined in the Group Risk Management Policy and reviewed on an ongoing basis by an independent audit function, which ensures the suitability and effectiveness of the risk management process.

Controlling the risks is performed in the decentralised business areas, that is, where the risks occur. Risk control in the Clearstream operational units is ensured by nominating “Operational Risk Representatives” who are responsible for identifying, notifying and controlling any risk in their area. Clearstream Risk Management, a central function within Clearstream, assesses all existing and potential new risks and reports on a quarterly basis and, if necessary, ad hoc to the relevant Executive Board (see risk management process below).



Figure 3: Risk management process

4.7. Risk identification

As one of the main ways to processing risk management, risk identification consists of the identification of all threats to Clearstream, and causes of loss, and potential business disruptions. Risks may arise due to internal activities or external factors, and the risk examination must be performed on existing or new processes, when concluding new business or entering new service areas.

On the one hand, the risk identification process is proactive, based on regular reviews of processes in order to identify weak areas and points of failure (for example, manual input required, process without double keying or four-eyes controls in place, specific procedures subject to high volumes or tight deadlines), based on scenarios of disruption or failure to take into consideration all sources of issues (for example, unavailability of systems, human error).

For the purposes of properly identifying potential risks to Clearstream, a risk inventory process has been established, for which a review is carried out at least on a yearly basis by Clearstream Risk Management. Likewise, the risk identification process is reactive, following an incident and, where appropriate, learning from this event. Post-mortem assessments are usually performed by the business on request of Clearstream Risk Management.

The identification phase also includes the quantification of risks in the form of parameters based either on statistical data – in the case of actual process monitoring – or on subjective expert judgement when insufficient statistics are available.

All organisational units and individual employees are obliged to identify and quantify potential risks within their area of responsibility.

4.8. Risk notification

Given the importance in continuity of risk management, the process step of risk notification ensures that risks are centrally recorded. To do so, all organisational units and individual

employees must notify Clearstream Risk Management in a timely manner of the risks that they have identified and have quantified. This allows the Bank to respond in a prompt manner to risks that have been identified as potentially being disruptive to our business and the wider financial system. All matters that could have a material impact on Clearstream Banking S.A. business or that might change the risk profile of Clearstream Banking S.A. must be recognised as early as possible.

4.9. Risk assessment

Following the notification of risk, the assessment of an incident or a potential risk development includes not only a quantification of risk using the “Value at Risk” (“VaR,”) methodology but also a comparison of the result with the available Risk-Bearing Capacity. The purpose is to allow the overall quantitative risk appetite to be expressed in a comprehensive and easily understandable way while facilitating the prioritisation of risk management actions.

The VaR quantifies the risks to which a company is exposed to and indicates the maximum cumulative loss Clearstream could face if certain independent loss events materialise over a specific time horizon for a given likelihood. Clearstream's models are based on a one-year time horizon and correlations between individual risk estimates that are recognised when calculating the capital charge for operational risk. The VaR is calculated at a confidence level of, 99.90% (Regulatory VaR) as well as 99.90% (Economic Capital).

Clearstream also performs stress test calculations, which consider even more conservative parameters than the regular VaR calculations. Risk-wide stress tests, which incorporate the interaction of all material risk types, are also carried out and reported to the Executive Board on a quarterly basis.

In addition to traditional stress tests that analyse the impacts of predefined stress scenarios, Clearstream calculates so-called reverse stress tests. These reverse stress-tests have the goal to identify the stress scenarios that would exceed the Available Risk-Bearing Capacity. The findings of reverse stress tests can give rise to further analyses, and to implementation of additional measures to reduce risk(s).

Moreover, Clearstream calculates VaR at the 99.00% confidence level for the determination of the Earnings at Risk (“EaR”). This VaR is used for information purposes only at the Clearstream level. It is not expected to have impact on capital or capital requirements. Therefore, it is not used for capital management.

4.10. Risk control & mitigation

All business areas and their employees are responsible for the risk control and for taking measures to limit potential losses. There are four possible responses for assessing the risk controls: Risk mitigation, risk avoidance, external risk transfer or deliberate risk acceptance. Each business area within Clearstream Banking S.A. decides and implements the most appropriate alternative in each case.

4.11. Risk monitoring & reporting

In the final risk management process, the organisational units and individual employees report to the Executive Board risks that pose a disruption to our business and the wider financial system. Risk reports are provided by Clearstream Risk Management to the Executive Board and Risk Committee on a regular basis.

These regular risk reports contain risk quantification results in comparison to the limits, risk-related qualitative information, information about stress tests and capital adequacy of the Bank. Clearstream Risk Management may issue ad-hoc reports whenever a new risk situation arises. An alternative is through the development of an existing risk, which requires reporting to the Executive Board. This is the case when a risk has a material impact on the risk profile of the Bank.

Ultimately, the internal audit function acts as a third line of defence by providing further assurance via independent audits, which verify that risk control and risk management is performed adequately. The results of these audits are also part of the risk management system.

4.12. ICAAP Information

In application of points (a) and (c) of Article 438 CRR the institutions shall disclose the approach to assessing the adequacy of their internal capital (ICAAP) using template EU OVC.

To facilitate the reading the relevant information is provided as free text below.

Legal basis	Row number	Free format
Article 438(a) CRR	(a)	Approach to assessing the adequacy of the internal capital.
Article 438(c) CRR	(b)	Upon demand from the relevant competent authority, the result of the institution's internal capital adequacy assessment process.

Table EU OVC - ICAAP information

Article 438(a) CRR

The Internal Capital Adequacy Assessment of Clearstream is defined centrally and calculated on a regular basis. The Executive Board of Clearstream and the Supervisory Board of Clearstream are ultimately responsible for the Risk Strategy of Clearstream and oversee the internal capital adequacy process. Clearstream Risk Management (CRM) prepares, updates and reviews the ICAAP report, presents it to the relevant Executive Boards for approval and provides the report to the regulatory authorities. The ICAAP report is subject to a quality assurance process. The checks are performed using the EBA Readers Manual. The input to the report is prepared and collected by CRM team members including other relevant parties. The final report is reviewed by the Chief Risk Officer of CBL and CH.

The process includes the first and second line of defence. The ICAAP Report is also reviewed by CH and CBL Compliance in line with CSSF requirements. The CH and CBL Chief Compliance Officer issues recommendations after having reviewed the report which will be discussed with CRM during a meeting and incorporated into the report. Internal Audit, as the

third line of defence, reviews the ICAAP regularly. Additionally, Clearstream follows clearly defined escalation procedures.

The Executive Board of CBL and the Supervisory Board of CBL are ultimately responsible for the Risk Strategy of Clearstream and the ICAAP with a focus on:

- Ensuring full compliance with the ICAAP objective concerning risk taking, mitigation and internal capital planning;
- Assuring adequate capitalisation of the Company;
- Ensuring effective risk management structures including risk policies and procedures to address and mitigate all risks to which Clearstream is exposed to;
- Ensuring that the Risk Strategy is integrated into the business activities throughout the entire group and that adequate measures are in place to implement the strategies, policies and procedures;
- Approving capital planning;
- Overseeing the integration of internal capital adequacy statement and framework (ICAAP) into the Company.

The Executive Board of CBL approves the capital adequacy statement and the Executive Boards of CH and CBL approve the ICAAP report and the key components of the ICAAP report which are defined as follows:

- Consistency between the business and risk strategies;
- Integration within the overall risk management and risk appetite frameworks; including early warning indicators, limit structures, and escalation procedures
- Identification, measurement, assessment, and aggregation of material risks;
- Assessment, planning and allocation of capital requirements for the normative and economic perspectives;
- Derivation and monitoring of the Available Risk Bearing Capacity;
- Stress testing and consistency with the recovery plan;
- Overall governance and IT support;
- Reporting;
- Capital Adequacy Statement.

The components are supported by objectives, assumptions and methodologies and are captured by clear, concise and consistent documentation approved by Executive Management.

[Article 428\(c\) CRR](#)

There was no specific demand from the relevant competent authority (CSSF) to disclose the result of the institution's internal capital adequacy assessment process in Pillar III report, hence this part is omitted.

4.13. Risk Profile

Clearstream differentiates between four major risk types that are managed and controlled with distinct methods. These risk types are operational risk, financial risk, business risk and pension risk. The risk types are illustrated in Figure 4 and are described in more detail in the

following sections. Project risk also exists but is not specifically quantified, it can arise as a result of project undertakings (launches of new products, services, processes or systems), which may have a significant impact on the operational risk category. Project risks are assessed by Clearstream Risk Management and are addressed in the early stages of major projects. Risks connected with the delivery of projects, such as budget risk, quality/scope risk and deadline risk, are monitored and reported by the units performing these projects. Based on relevant monitoring and control, project risks are continuously analysed and assessed. The risk types are illustrated in Figure 4 below and are described in more detail in the following sections.

The risk profile of Clearstream differs fundamentally from those of other financial services providers. Operational risk is assessed as major risk type within Clearstream. Business risk is considered material. Regarding, Pension Risk is considered as an immaterial risk in the risk profile, but processes are applied treating it as a material risk type. Financial risk is discussed in subsequent chapters.



Figure 4: Risk profile of Clearstream

5. Linkages between financial statements and regulatory exposures

5.1. Financial Statement Linkages Overview

This paragraph specifies the requirements included in Article 436 of Part Eight CRR regarding the scope of application of disclosures. In the application of Article 436(b), institutions are required to disclose an outline of the differences in the basis of consolidation for accounting and prudential purposes.

As of 31 December 2022 CBL had one direct subsidiary:

- Clearstream London Limited (“CLL”), dormant company, incorporated on 27 December 2018. Registered office: Westferry House, 2nd Floor, 11 Westferry Circus, Canary Wharf, London E14 4HE, United Kingdom. Clearstream London Limited is directly 100% owned by the Bank.

As of 31 December 2022, CBL had the three following branches:

- Clearstream Banking S.A., Singapore branch (created in 2009). Registered office: 9 Raffles Place #55-01 Republic Plaza Singapore 048619 Singapore.
- Clearstream Banking S.A., UK branch (opened on 4 January 2016) which took over the activities of its former representative office. Registered office: Westferry House, 2nd Floor, 11 Westferry Circus, Canary Wharf, London E14 4HE, United Kingdom.
- Clearstream Banking S.A., Japan branch (created in 2021). Registered office: 27F, Marunouchi Kitaguchi Building, 1-6-5, Marunouchi, Chiyoda-ku, Tokyo, Japan.

In comparison with 2021 following subsidiaries are not owned by CBL anymore:

- On 3 September 2021, Clearstream Banking S.A signed binding contracts to sell its investment in REGIS-TR S.A. (18,000 ordinary shares or 50% of the total share capital) to Sociedad de Gestión de los Sistemas de Registro, Compensación y Liquidación de Valores, S.A. Unipersonal (SIX Group). The sale was successfully closed on 31 March 2022.
- As of 26 April 2021, Clearstream Banking S.A., Japan branch has been registered in the Japanese corporate register. The purpose of establishing a branch is to further fortify the presence of Clearstream and ensure a solid regulatory environment enabling a transparent long-term business positioning in Japan. The Japan branch obtained the banking license in January 2022 and thus became fully operational. The Bank liquidated Clearstream Banking Japan, Ltd in December 2022.
- As part of the growth strategy for the Investment Fund Services (“IFS”) business segment, on 30 December 2022, with a retroactive effect from 30 June 2022, CBL transferred its IFS business, as a Strategic Business Unit (“SBU”), to Clearstream Fund Centre S.A. (“CFCL”), a fund services company established under Luxembourgish law on 16 November 2021. As part of the project CBL transferred the legal ownership of all of its shares in CFCL to Clearstream Fund Centre Holding S.A. by means of partial demerger as of 30 December 2022.

- As part of IFS project, CBL transferred the legal ownership of all its shares in Clearstream Australia Limited, incorporated in 1994, to Clearstream Fund Centre S.A. as of 30 December 2022.

The information on the consolidation method applied for each entity within the accounting and regulatory scopes of consolidation is provided in the following table:

a	b	c	d	e	f	g	h
Name of the entity	Method of accounting consolidation	Method of prudential consolidation					Description of the entity
		Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	
<i>Clearstream London Limited</i>	<i>Not consolidated</i>				X		<i>Ancillary services undertaking</i>

Template EU LI3 - Outline of the differences in the scopes of consolidation (entity by entity)

As per Article 83 of the Law of 17 June 1992, as amended, CBL does not prepare consolidated financial statements because Clearstream Banking S.A. only has subsidiary undertakings that are not material for the purpose of Article 85(3) of the Law of 17 June 1992, as amended (consolidated accounts shall give a true and fair view of the assets, liabilities, financial position, and profit or loss of the undertakings included therein taken as a whole), both individually and as a whole.

According to CRR provisions CBL is not required to comply with prudential requirements on sub-consolidated basis. Consequently, there is no difference between accounting and prudential scope of consolidation.

The table below shows a breakdown of the differences in the scope of consolidation along accounting and regulatory lines and allocates the different amounts to the regulatory risk categories, namely, credit risk, counterparty credit risk and market risk, as well as the part that is not subject to capital requirements or subject to deduction from capital.

		a	b	c	d	e		f	g
		Carrying values as reported in published financial statements	Carrying values under scope of prudential consolidation	Carrying values of items					
(in 000 of €)				Subject to the credit risk framework	Subject to the CCR framework	Subject to the securitisation framework	Subject to the market risk framework	Not subject to own funds requirements or subject to deduction from own funds	
Breakdown by asset classes according to the balance sheet in the published financial statements									
1	Cash, cash balances at central banks and other demand deposits	10,089,625	9,650,902	9,650,902				9,650,902	
2	Financial assets held for trading	4,723	5,096		5,096			5,096	
3	Financial assets at fair value through other comprehensive income	7,217	7,217	7,217				7,217	
4	Financial assets at fair value through profit and loss	1,734	1,734	1,734				1,734	
5	Financial assets at amortized cost	7,007,122	7,376,531	7,376,531				7,376,531	
5a	of which Debt securities	1,591,044	1,591,475	1,591,475				1,591,475	
5b	of which Loans and Advances	5,416,079	5,785,056	5,785,056				5,785,056	
8	Derivatives - hedge accounting	5,410	4,922		4,922			4,922	
9	Investments in subsidiaries, joint ventures and associates	14	14	14				14	
10	Tangible assets	12,200	11,482	11,482				11,482	
11	Intangible assets	1	1					1	1
12	Tax assets	1,102	1,100					1,100	1,100
13	Other assets	45,292	44,888	44,888				44,888	
13a	of which Other assets	42,499	42,110	42,110				42,110	
13b	of which Prepayments and accrued income	2,793	2,778	2,778				2,778	
	Total assets	17,174,441	17,103,888	17,092,769	10,018			17,103,888	1,101
Breakdown by liability classes according to the balance sheet in the published financial statements									
1	Financial liabilities held for trading	118,360	118,064		118,064			118,064	
2	Financial liabilities measured at amortised	15,414,302	15,350,014					15,350,014	15,350,014
3	Provisions	16,323	16,408					16,408	16,408
4	Tax liabilities	91,837	92,816					92,816	92,816
5	Other liabilities	72,278	62,305					62,305	62,305
5a	of which Other liabilities	14,645	8,540					8,540	8,540
5b	of which Accruals and deferred income	57,633	53,765					53,765	53,765
	Total liabilities	15,713,100	15,639,606		118,064			15,639,606	15,521,543

Template EU LI1 - Differences between the accounting scope and the scope of prudential consolidation and mapping of financial statement categories with regulatory risk categories

The following table provides information on the main sources of differences between the published financial statements and COREP reporting (other than those due to different scopes of consolidation):

	(in 000 of €)	a	b	c	d	e
		Total	Items subject to			
			Credit risk framework	Securitisation framework	CCR framework	Market risk framework
1	Assets carrying value amount under the scope of prudential consolidation (as per template LI1)	17,102,787	17,092,769		10,018	17,103,888
2	Liabilities carrying value amount under the scope of prudential consolidation (as per template LI1)	118,064	-		118,064	15,639,606
3	Total net amount under the scope of prudential consolidation	16,984,724	17,092,769	-	(108,046)	1,464,282
4	Off-balance-sheet amounts	1,385,230	1,385,230			
5	Differences in valuations					
6	Differences due to different netting rules, other than those already included in row 2					
7	Differences due to consideration of provisions					
8	Differences due to the use of credit risk mitigation techniques (CRMs)	(49,306,155)	(49,306,155)			
9	Differences due to credit conversion factors					
10	Differences due to Securitisation with risk transfer					
11	Other differences	42,812,703	42,645,674		167,029	
12	Exposure amounts considered for regulatory purposes	11,876,502	11,817,518	-	58,984	43,785

Template EU LI2 - Main sources of differences between regulatory exposure amounts and carrying values in financial statements

In application of points (b) and (d) of Article 436 CRR, institutions shall provide explanation to differences in templates LI1 and LI2 by completing template EU LIA.

Legal basis	Row number	Qualitative information - Free format.
Article 436(b) CRR	(a)	Differences between columns (a) and (b) in template EU LI1.
Article 436(d) CRR	(b)	Qualitative information on the main sources of differences between the accounting and regulatory scope of consolidation shown in template EU LI2.

Table EU LIA - Explanations of differences between accounting and regulatory exposure amounts

To facilitate the reading the required information is disclosed as free text below.

Article 436(b) CRR

The main differences between the financial statements and the regulatory scope arise due to the following reasons:

- The difference in demand deposits and loans and advances is caused, in part, by a different classification of overnight repos, that is, classification of overnight repos as demand deposits in the financial statements and classification as loans and advances in prudential reports.
- The difference in loans and advances and in financial liabilities measured at amortised cost is due to a reclassification of fee receivables from other assets to loans and advances, and the reclassification of debtor amounts between assets and

liabilities as no netting on counterparty level is performed for regulatory reporting purposes.

- The difference in other liabilities is due to reclassification of some items to financial liabilities in FINREP.
- In addition, the difference in all the positions is explained by the use of different foreign exchange rates, that is, Bloomberg rates are used for accounting purposes whilst ECB rates are used for FINREP.

Article 436(d) CRR

The differences between the assets carrying amount under regulatory scope and the actual risk exposures used in COREP are caused by the following factors:

- Intangible assets and deferred tax assets are directly deducted from own funds. Hence, they are included in the carrying amount under regulatory scope but not in the credit risk exposure for risk reporting.
- The difference in the CCR framework is due to the different value in derivatives exposure, since the standardised approach under provisions of Chapter 6 of Title II of Part Three CRR is used for risk reporting whereas the fair value is recognised for the purpose of FINREP.
- The difference for the market risk framework exposure arises due to the netting of long and short positions for foreign exchange exposures in the risk reporting.
- Off-balance exposures include exposures arising from the ASL program (see [10.4.6 ASL](#)).
- Other differences include the amount of exposures arising from the ASLplus program (see [10.4.7. ASLplus](#)).
- Differences due to the use of credit risk mitigation techniques (CRMs) correspond to the amount of collateral after volatility adjustments received for reverse repurchase agreements, ASL and ASLplus.

6. Own funds and capital

6.1. Composition of capital

Following the disclosure requirements in Article 437 CRR, as specified in Implementing Regulation (EU) No 1423/2013 of December 2013, institutions are required to provide information concerning the capital composition, including reconciliation with their balance sheet and the main features of the regulatory capital instruments.

Furthermore, Article 438 CRR requires disclosure of an overview of the total RWA and the related minimum capital requirements. Further breakdowns of RWAs are presented in subsequent parts of this report.

The total regulatory capital of Clearstream Banking S.A. consists of Common Equity Tier 1 (CET1) capital, which comprises following items:

- Subscribed capital;
- Share premium;
- Reserves and retained earnings;
- Revaluation reserves.

The profit of the year is not taken into account as generally not audited at the moment of preparation of reports. In addition, with exception of mandatory contribution to reserves, the profit of the year is generally distributed in form of dividends and not held in retained earnings.

Deductions of CET1 arise from following items:

- Intangible assets (Article 36(b) CRR);
- Deferred tax assets (Article 36(c) CRR);
- Revaluation reserve for cash-flow hedges (article 33 CRR);
- 20% of net worth tax (NWT) reserve;
- Regulatory adjustments:
 - Amount of insufficient coverage for non-performing exposures (Article 36(m) CRR);
 - Amount corresponding to prudent valuation adjustment (Article 34 CRR).

CBL does not hold any investments in financial sector entities that should be deducted from own funds in accordance with points (f), (g), (h), (i) of Article 36 CRR.

The amount of intangible assets deducted from own funds reduced significantly in 2022 compared to 2021 due to transfer of those items to CFCL as part of IFS project.

The amount of deduction for non-performing exposure was nil as of 31 December 2022, as the credit risk adjustment for such losses was sufficient.

Following Article 438(c) to (f) CRR, institutions should disclose an overview of total RWA forming the denominator of the risk-based capital requirements calculated per Article 92 CRR and summary of the institution's calculation approaches chosen. Select rows are not shown given no values to report at the Bank on 31 December 2022. Below template EU CC1

provides the information on the composition of Own Funds on 31 December 2022 with accompanying ratios.

(in 000 of €)		(a)	(b)
		Amounts	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
Common Equity Tier 1 (CET1) capital: instruments and reserves			
1	Capital instruments and the related share premium accounts	321,935	equity (1)+ (2)
	of which: Instrument type 1 - Paid-in capital	92,000	equity (1)
	of which: Instrument type 2 - Share premium	229,935	equity (2)
2	Retained earnings		
3	Accumulated other comprehensive income (and other reserves)	706,644	equity (3)+(4)+(5)
EU-3a	Funds for general banking risk		
4	Amount of qualifying items referred to in Article 484 (3) CRR and the related share premium accounts subject to phase out from CET1		
5	Minority interests (amount allowed in consolidated CET1)		
EU-5a	Independently reviewed interim profits net of any foreseeable charge or dividend		
6	Common Equity Tier 1 (CET1) capital before regulatory adjustments	1,028,579	
Common Equity Tier 1 (CET1) capital: regulatory adjustments			
7	Additional value adjustments (negative amount)	(137)	PVA on assets (3), (4), (5), (7), (8) and liabilities (1),(3),
8	Intangible assets (net of related tax liability) (negative amount)	(1)	assets (10)
9	Not applicable		
10	Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liability where the conditions in Article 38 (3) CRR are met) (negative amount)		
11	Fair value reserves related to gains or losses on cash flow hedges of financial instruments that are not valued at fair value	(4,061)	equity (3a)
12	Negative amounts resulting from the calculation of expected loss amounts		
13	Any increase in equity that results from securitised assets (negative amount)		
14	Gains or losses on liabilities valued at fair value resulting from changes in own credit standing		
15	Defined-benefit pension fund assets (negative amount)		
16	Direct, indirect and synthetic holdings by an institution of own CET1 instruments (negative amount)		

17	Direct, indirect and synthetic holdings of the CET 1 instruments of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)		
18	Direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial sector entities where the institution does not have a significant investment in those entities (amount above 10% threshold and net of eligible short positions) (negative amount)		
19	Direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above 10% threshold and net of eligible short positions) (negative amount)		
20	Not applicable		
EU-20a	Exposure amount of the following items which qualify for a RW of 1250%, where the institution opts for the deduction alternative		
EU-20b	of which: qualifying holdings outside the financial sector (negative amount)		
EU-20c	of which: securitisation positions (negative amount)		
EU-20d	of which: free deliveries (negative amount)		
21	Deferred tax assets arising from temporary differences (amount above 10% threshold, net of related tax liability where the conditions in Article 38(3) CRR are met) (negative amount)	(1,100)	assets (11)
22	Amount exceeding the 17,65% threshold (negative amount)		
23	of which: direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities		
24	Not applicable		
25	of which: deferred tax assets arising from temporary differences		
EU-25a	Losses for the current financial year (negative amount)		
EU-25b	Foreseeable tax charges relating to CET1 items except where the institution suitably adjusts the amount of CET1 items insofar as such tax charges reduce the amount up to which those items may be used to cover risks or losses (negative amount)		
26	Not applicable		
27	Qualifying AT1 deductions that exceed the AT1 items of the institution (negative amount)		
27a	Other regulatory adjustments	(15,000)	Deductible net worth tax reserve in equity (5a)
28	Total regulatory adjustments to Common Equity Tier 1 (CET1)	(20,298)	
29	Common Equity Tier 1 (CET1) capital	1,008,281	
Additional Tier 1 (AT1) capital: instruments			

30	Capital instruments and the related share premium accounts		
31	of which: classified as equity under applicable accounting standards		
32	of which: classified as liabilities under applicable accounting standards		
33	Amount of qualifying items referred to in Article 484 (4) CRR and the related share premium accounts subject to phase out from AT1		
EU-33a	Amount of qualifying items referred to in Article 494a(1) CRR subject to phase out from AT1		
EU-33b	Amount of qualifying items referred to in Article 494b(1) CRR subject to phase out from AT1		
34	Qualifying Tier 1 capital included in consolidated AT1 capital (including minority interests not included in row 5) issued by subsidiaries and held by third parties		
35	of which: instruments issued by subsidiaries subject to phase out		
36	Additional Tier 1 (AT1) capital before regulatory adjustments		
Additional Tier 1 (AT1) capital: regulatory adjustments			
37	Direct, indirect and synthetic holdings by an institution of own AT1 instruments (negative amount)		
38	Direct, indirect and synthetic holdings of the AT1 instruments of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)		
39	Direct, indirect and synthetic holdings of the AT1 instruments of financial sector entities where the institution does not have a significant investment in those entities (amount above 10% threshold and net of eligible short positions) (negative amount)		
40	Direct, indirect and synthetic holdings by the institution of the AT1 instruments of financial sector entities where the institution has a significant investment in those entities (net of eligible short positions) (negative amount)		
41	Not applicable		
42	Qualifying T2 deductions that exceed the T2 items of the institution (negative amount)		
42a	Other regulatory adjustments to AT1 capital		
43	Total regulatory adjustments to Additional Tier 1 (AT1) capital		
44	Additional Tier 1 (AT1) capital		
45	Tier 1 capital (T1 = CET1 + AT1)	1,008,281	
Tier 2 (T2) capital: instruments			
46	Capital instruments and the related share premium accounts		
47	Amount of qualifying items referred to in Article 484(5) CRR and the related share		

	premium accounts subject to phase out from T2 as described in Article 486(4) CRR		
EU-47a	Amount of qualifying items referred to in Article 494a(2) CRR subject to phase out from T2		
EU-47b	Amount of qualifying items referred to in Article 494b(2) CRR subject to phase out from T2		
48	Qualifying own funds instruments included in consolidated T2 capital (including minority interests and AT1 instruments not included in rows 5 or 34) issued by subsidiaries and held by third parties		
49	of which: instruments issued by subsidiaries subject to phase out		
50	Credit risk adjustments		
51	Tier 2 (T2) capital before regulatory adjustments		
Tier 2 (T2) capital: regulatory adjustments			
52	Direct, indirect and synthetic holdings by an institution of own T2 instruments and subordinated loans (negative amount)		
53	Direct, indirect and synthetic holdings of the T2 instruments and subordinated loans of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)		
54	Direct, indirect and synthetic holdings of the T2 instruments and subordinated loans of financial sector entities where the institution does not have a significant investment in those entities (amount above 10% threshold and net of eligible short positions) (negative amount)		
54a	Not applicable		
55	Direct, indirect and synthetic holdings by the institution of the T2 instruments and subordinated loans of financial sector entities where the institution has a significant investment in those entities (net of eligible short positions) (negative amount)		
56	Not applicable		
EU-56a	Qualifying eligible liabilities deductions that exceed the eligible liabilities items of the institution (negative amount)		
EU-56b	Other regulatory adjustments to T2 capital		
57	Total regulatory adjustments to Tier 2 (T2) capital		
58	Tier 2 (T2) capital		
59	Total capital (TC = T1 + T2)	1,008,281	
60	Total Risk exposure amount	3,498,887	Assets (1) to (13)
Capital ratios and requirements including buffers			
61	Common Equity Tier 1 capital	28.82%	
62	Tier 1 capital	28.82%	
63	Total capital	28.82%	

64	Institution CET1 overall capital requirements	7.92%	
65	of which: capital conservation buffer requirement	2.50%	
66	of which: countercyclical capital buffer requirement	0.14%	
67	of which: systemic risk buffer requirement	0.00%	
EU-67a	of which: Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer requirement	0.50%	
EU-67b	of which: additional own funds requirements to address the risks other than the risk of excessive leverage	0.28%	
68	Common Equity Tier 1 capital (as a percentage of risk exposure amount) available after meeting the minimum capital requirements	20.54%	
National minima (if different from Basel III)			
69	Not applicable		
70	Not applicable		
71	Not applicable		
Amounts below the thresholds for deduction (before risk weighting)			
72	Direct and indirect holdings of own funds and eligible liabilities of financial sector entities where the institution does not have a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	7,217	(4)
73	Direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 17.65% thresholds and net of eligible short positions)	14	(8)
74	Not applicable		
75	Deferred tax assets arising from temporary differences (amount below 17,65% threshold, net of related tax liability where the conditions in Article 38 (3) CRR are met)		
Applicable caps on the inclusion of provisions in Tier 2			
76	Credit risk adjustments included in T2 in respect of exposures subject to standardised approach (prior to the application of the cap)		
77	Cap on inclusion of credit risk adjustments in T2 under standardised approach		
78	Credit risk adjustments included in T2 in respect of exposures subject to internal ratings-based approach (prior to the application of the cap)		
79	Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach		
Capital instruments subject to phase-out arrangements (only applicable between 1 Jan 2014 and 1 Jan 2022)			
80	Current cap on CET1 instruments subject to phase out arrangements		
81	Amount excluded from CET1 due to cap (excess over cap after redemptions and maturities)		

82	Current cap on AT1 instruments subject to phase out arrangements		
83	Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)		
84	Current cap on T2 instruments subject to phase out arrangements		
85	Amount excluded from T2 due to cap (excess over cap after redemptions and maturities)		

Template EU CC1 - Composition of regulatory own funds

Institution CET1 overall capital requirements include regulatory requirement of 4.5% plus overall buffer requirement composed of:

- Capital conservation buffer;
- Institution specific countercyclical buffer;
- O-SII buffer;
- SREP buffer requirement;

As an O-SII CBL is subject to additional buffer requirement of 0.5%.

Further to the provisions of Article 59-5 of the Law of 5 April 1993 on the financial sector, CBL is subject to additional capital requirement equal to 2.5% of total risk exposure amount (TREA) corresponding to the capital conservation buffer.

Within its supervisory review and evaluation process (SREP) in 2019, further to Article 28(1) of CSSF Regulation 15-02, the CSSF has concluded that, in excess of the requirements specified in Article 92 CRR, CBL is required to maintain the additional own funds equal to 1% of TREA. In August 2022 this requirement was reduced to 0.5% to be held in the form of 56,25% CET1 capital and 75% of Tier 1 capital as a minimum.

6.1.1. Main features of own funds

Disclosure under point (b) of Article 437 CRR 2 is shown in the template EU CCA below, in line with the requirements set out in Implementing Regulation (EU) No 1423/2013.

		(a)
		Qualitative or quantitative information
1	Issuer	Clearstream Banking S.A.
2	Unique identifier (eg CUSIP, ISIN or Bloomberg identifier for private placement)	N/A
2a	Public or private placement	Private
3	Governing law(s) of the instrument	Luxembourg Company Law: Law of 10 August 1915 on commercial companies
3a	Contractual recognition of write down and conversion powers of resolution authorities	N/A
<i>Regulatory treatment</i>		
4	Current treatment taking into account, where applicable, transitional CRR rules	Common Equity Tier 1
5	Post-transitional CRR rules	Common Equity Tier 1
6	Eligible at solo/(sub-)consolidated/ solo&(sub-)consolidated	Solo

7	Instrument type (types to be specified by each jurisdiction)	Ordinary Shares
8	Amount recognised in regulatory capital or eligible liabilities (Currency in million, as of most recent reporting date)	EUR 321
9	Nominal amount of instrument (currency in millions)	EUR 92 (920,002 shares of 100 nominal)
EU-9a	Issue price	100
EU-9b	Redemption price	Not determined as not quoted on regulated markets
10	Accounting classification	Shareholders' equity
11	Original date of issuance	1970
12	Perpetual or dated	Perpetual
13	Original maturity date	N/A
14	Issuer call subject to prior supervisory approval	No
15	Optional call date, contingent call dates and redemption amount	N/A
16	Subsequent call dates, if applicable	N/A
<i>Coupons / dividends</i>		
17	Fixed or floating dividend/coupon	Floating
18	Coupon rate and any related index	N/A
19	Existence of a dividend stopper	No
EU-20a	Fully discretionary, partially discretionary or mandatory (in terms of timing)	Fully discretionary
EU-20b	Fully discretionary, partially discretionary or mandatory (in terms of amount)	Fully discretionary
21	Existence of step up or other incentive to redeem	No
22	Noncumulative or cumulative	Non-cumulative
23	Convertible or non-convertible	Non-convertible
24	If convertible, conversion trigger(s)	N/A
25	If convertible, fully or partially	N/A
26	If convertible, conversion rate	N/A
27	If convertible, mandatory or optional conversion	N/A
28	If convertible, specify instrument type convertible into	N/A
29	If convertible, specify issuer of instrument it converts into	N/A
30	Write-down features	No
31	If write-down, write-down trigger(s)	N/A
32	If write-down, full or partial	N/A
33	If write-down, permanent or temporary	N/A
34	If temporary write-down, description of write-up mechanism	N/A
34a	Type of subordination (only for eligible liabilities)	N/A
EU-34b	Ranking of the instrument in normal insolvency proceedings	Rank 1
35	Position in subordination hierarchy in liquidation (specify instrument type immediately senior to instrument)	N/A
36	Non-compliant transitioned features	No
37	If yes, specify non-compliant features	N/A
37a	Link to the full term and conditions of the instrument (signposting)	N/A

Table EU CCA: Main features of regulatory own funds instruments and eligible liabilities instruments

6.2. Balance sheet reconciliation

In application of point (a) of Article 437(1) CRR the following EU CC2 template provides the reconciliation between the audited financial statements for the year-end disclosures with the own funds presented in template EU CC1. Reference column provides the cross reference for corresponding item in template CC1.

		(a)	(b)	(c)
		Balance sheet as in published financial statements	Under regulatory scope of consolidation	Reference
		As at period end	As at period end	
Assets - Breakdown by asset classes according to the balance sheet in the published financial statements				
1	Cash in hand, balances with central banks	8,389,228	8,401,744	(60)
2	Loans and advances to credit institutions repayable on demand	1,700,397	1,249,158	(60)
3	Financial assets held for trading - FX derivatives	4,723	5,096	(7),(60)
4	Financial assets FVOCI - Participating interests	7,217	7,217	(7),(60),(72)
5	Financial assets FVPL - Participating interests	1,734	1,734	(7),(60)
6	Financial assets at amortised cost	7,007,122	7,376,531	(60)
6a	<i>Debt securities</i>	<i>1,591,044</i>	<i>1,591,475</i>	(60)
6b	<i>Loans and advances</i>	<i>5,416,079</i>	<i>5,785,056</i>	(60)
7	Derivatives – hedge accounting - cash flow hedges	5,410	4,922	(7),(60)
8	Investments in subsidiaries, joint ventures and associates	14	14	(7),(60),(73)
9	Tangible assets	12,200	11,482	(60)
10	Intangible assets	1	1	(8)
11	Deferred tax assets	1,102	1,100	(21)
12	Other assets	42,499	42,110	(60)
13	Prepayments and accrued income	2,793	2,778	(60)
	Total assets	17,174,441	17,103,888	
Liabilities - Breakdown by liability classes according to the balance sheet in the published financial statements				
1	Financial liabilities held for trading - FX derivatives	118,360	118,064	(7)
2	Financial liabilities measured at amortised cost	15,414,302	15,350,014	
2a	<i>Deposits</i>	<i>14,739,872</i>	<i>14,742,915</i>	
2b	<i>Debt securities issued</i>	<i>504,545</i>	<i>504,545</i>	
2c	<i>Other financial liabilities</i>	<i>169,886</i>	<i>102,554</i>	
3	Derivatives – Hedge Accounting - cash flow hedges	0	0	(7)
4	Other liabilities	14,645	8,540	
5	Accruals and deferred income	57,633	53,765	

6	Provisions for pension and similar obligations	880	880	
7	Other provisions	15,444	15,529	
8	Current tax liabilities	87,895	88,874	
9	Deferred tax liabilities	3,942	3,942	
	Total liabilities	15,713,100	15,639,606	
Shareholders' Equity				
1	Paid in capital	92,000	92,000	(1)
2	Share premium account	229,935	229,935	(1)
3	Accumulated other comprehensive income	11,863	11,863	(2)
3a	<i>Cash flow hedges (effective portion)</i>	<i>4,061</i>	<i>4,061</i>	<i>(2),(11)</i>
3b	<i>Actuarial gains/losses on defined benefit pension plans</i>	<i>3,847</i>	<i>3,847</i>	<i>(2)</i>
3c	<i>Fair value changes of equity instr. measured FVOCI</i>	<i>3,956</i>	<i>3,956</i>	<i>(2)</i>
4	Legal reserves	9,200	9,200	(2)
5	Other reserves	686,102	685,581	(2)
5a	<i>Deductible NWT reserve</i>	<i>15,000</i>	<i>15,000</i>	<i>(27a)</i>
6	Profit for the financial year	432,240	435,702	
	Total shareholders' equity	1,461,341	1,464,282	

Template EU CC2 - reconciliation of regulatory own funds to balance sheet in the audited financial statements

The main differences are stemming from:

- Various reclassifications between positions;
- Usage of mixed regime LuxGAAP with IFRS options in financial statements vs full IFRS for regulatory reporting purposes;
- Usage of different Foreign Exchange (FX) rates.

For more information please refer to [Chapter 5.1](#).

Additional reconciliation of accounting equity as reported in financial statements with regulatory own funds is provided below:

Balance Sheet Reconciliation	(in 000 of €)
Own Funds elements in the Annual Financial Statements	
Subscribed Capital	92,000
Share premium	229,935
Accumulated other comprehensive income	11,863
Capital Reserve	0
Legal Reserve	9,200
Other reserves and retained earnings	686,102
Profits for the financial year	432,240

Total Own Funds Elements in Audited Financial Statements	1,461,341
Profits for the financial year	(432,240)
Eligible Capital (CET1) before adjustments	1,029,100
Regulatory adjustments	
Deduction other intangible assets	(1)
Deduction of deferred tax	(1,102)
Deduction of cash flow hedge reserve	(4,061)
Prudent valuation adjustment	(137)
Deduction of net worth tax reserve (20%)	(15,000)
Other adjustments	
Valuation differences	(519)
Common Equity Tier 1 Capital/Total Eligible Own Funds	1,008,281

Table 4: Reconciliation of regulatory own funds to accounting equity in the audited financial statements

From the above reconciliation, the own funds in the financial statements of Clearstream Banking S.A. considers profits allocated to retained earnings with the approval of the financial statement and year-end profits, neither of which qualify for the regulatory own funds on 31 December 2022. The profits allocated to retained earnings do not count as CET1 capital if the financial statements are not approved or if prior permission by the competent authority according to Article 26 paragraph 2 CRR is not granted.

Other differences arise from regulatory deductions and from valuation differences due to the usage of different FX rates, mostly reflected in historical value of reserves.

6.3. Countercyclical capital buffer

The countercyclical capital buffer (CCyB) aims to ensure that banking sector capital requirements take account of the macro-financial environment in which banks operate, by building up capital to create buffers that strengthen the resilience of the institution. According to Delegated Regulation (EU) 2015/1555 on the disclosure of information concerning the compliance of institutions with the requirement for a countercyclical buffer, which implements Article 440 CRR, where institutions are required to disclose their capital buffers.

Template EU CCyB1 below provides the information on the exposures in the countries, where countercyclical buffer rate is different from 0. Clients should refer to [Appendix A](#) for full country-specific/geographic distribution of credit exposures that are relevant for the countercyclical buffer.

Template EU CCyB2 provides the information on the calculated institution-specific countercyclical capital buffer as of 31 December 2022.

(in €)		a	b	c	d	e	f	g	h	i	j	k	l	m
		General credit exposures		Relevant credit exposures – Market risk		Securitisation exposures	Total exposure value	Own fund requirements			Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%)	
		Exposure value under the standardised approach	Exposure value under the IRB approach	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for internal models	Exposure value for non-trading book		Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book				Total
010	Breakdown by country:													
	CZECH REPUBLIC	1,307,223					1,307,223	104,578			104,578	1,307,223	0.31%	1.50%
	DENMARK	98					98	8			8	98	0.00%	2.00%
	UNITED KINGDOM	20,749,424					20,749,424	1,072,307			1,072,307	13,403,838	1.00%	1.00%
	HONG KONG	144,569					144,569	11,525			11,525	144,062	0.03%	1.00%
	LUXEMBOURG	82,358,794					82,358,794	6,631,677			6,631,677	82,895,966	19.58%	0.50%
	NORWAY	14,266					14,266	1,141			1,141	14,266	0.00%	2.00%
	ROMANIA	5,737					5,737	459			459	5,737	0.00%	0.50%
	SWEDEN	975,804					975,804	78,064			78,064	975,804	0.23%	1.00%
020	Total	105,555,915	0	0	0	0	105,555,915	7,899,760	0	0	7,899,760	98,746,994	21.15%	

Template EU CCyB1 - Geographical distribution of credit exposures relevant for the calculation of the countercyclical buffer

(in €)		a
1	Total risk exposure amount	3,498,886,696
2	Institution specific countercyclical capital buffer rate	0.14%
3	Institution specific countercyclical capital buffer requirement	4,790,711

Template EU CCyB2 - Amount of institution-specific countercyclical capital buffer

6.4. Risk-Weighted Capital

The following table summarises the capital requirements of Clearstream Banking S.A. for the different types of risks and the relevant calculation method:

(in 000 of €)		Total risk exposure amounts (TREA)		Total own funds requirements
		a	b	c
		31/12/2022	31/12/2021	31/12/2022
1	Credit risk (excluding CCR)	623,469	838,768	49,878
2	Of which the standardised approach	623,469	838,768	49,878
3	Of which the Foundation IRB (F-IRB) approach			
4	Of which slotting approach			
EU 4a	Of which equities under the simple risk-weighted approach			
5	Of which the Advanced IRB (A-IRB) approach			
6	Counterparty credit risk - CCR	35,246	183,090	2,820
7	Of which the standardised approach	22,631		1,810
8	Of which internal model method (IMM)			
EU 8a	Of which exposures to a CCP	3,782	2,046	303
EU 8b	Of which credit valuation adjustment - CVA	8,833	53,436	707
9	Of which other CCR		127,608	
10	Not applicable			
11	Not applicable			
12	Not applicable			
13	Not applicable			
14	Not applicable			
15	Settlement risk			
16	Securitisation exposures in the non-trading book (after the cap)			
17	Of which SEC-IRBA approach			
18	Of which SEC-ERBA (including IAA)			
19	Of which SEC-SA approach			
EU 19a	Of which 1250% / deduction			
20	Position, foreign exchange and commodities risks (Market risk)	43,785	-	3,503
21	Of which the standardised approach			
22	Of which IMA			
EU 22a	Large exposures			

23	Operational risk	2,796,386	3,015,410	223,711
EU 23a	Of which basic indicator approach			
EU 23b	Of which standardised approach			
EU 23c	Of which advanced measurement approach	2,796,386	3,015,410	223,711
24	Amounts below the thresholds for deduction (subject to 250% risk weight)			
25	Not applicable			
26	Not applicable			
27	Not applicable			
28	Not applicable			
29	Total	3,498,887	4,037,268	279,911

Template EU OV1 – Overview of total risk exposure amounts

Operational risk calculated under Advanced Measurement Approach (AMA) represent the most significant risk for CBL. Detailed information on the management, monitoring and measurement of operational risk is available in [Chapter 9](#).

Credit risk represents the exposures from on-balance and off-balance sheet items with the exception of derivatives. For credit risk exposures from SFT (reverse repurchase agreements, ASL and ASLplus) CBL applies standardised approach for credit risk as per Chapters 2 and 4 Title II Part Three of CRR rather than specific provisions for counterparty credit risk as per Chapter 6 Title II Part Three of CRR.

In 2022, CBL changed the method used to calculate counterparty credit risk stemming from derivatives transactions from Original Exposure Method (OEM) to Standardised Approach (SA-CCR). The change in the method resulted in a decrease of corresponding risk-weighted exposure from EUR 127.6 mn to EUR 22.6 mn. The exposure from Credit Valuation Adjustment reduced accordingly.

The increase in exposure from foreign exchange position mainly corresponds to the increased position from JPY and USD. For more information market risk clients should refer to [Chapter 12](#).

7. Leverage ratio

7.1. Leverage Ratio

The disclosure requirements concerning the leverage ratio are laid out in Article 451 CRR and specified in Article 6 of Commission Implementing Regulation (EU) No 2021/637 of 15 March 2021.

In application of point (b) of Article 451(1) CRR the following table shows the reconciliation of the leverage ratio total exposure measure with the relevant information in the published financial statements as on 31 December 2022.

(in 000 of €)		(a)
		Applicable amount
1	Total assets as per published financial statements	17,174,441
2	Adjustment for entities which are consolidated for accounting purposes but are outside the scope of prudential consolidation	
3	(Adjustment for securitised exposures that meet the operational requirements for the recognition of risk transference)	
4	(Adjustment for temporary exemption of exposures to central banks (if applicable))	
5	(Adjustment for fiduciary assets recognised on the balance sheet pursuant to the applicable accounting framework but excluded from the total exposure measure in accordance with point (i) of Article 429a(1) CRR)	
6	Adjustment for regular-way purchases and sales of financial assets subject to trade date accounting	
7	Adjustment for eligible cash pooling transactions	
8	Adjustment for derivative financial instruments	90,678
9	Adjustment for securities financing transactions (SFTs)	56,788
10	Adjustment for off-balance sheet items (ie conversion to credit equivalent amounts of off-balance sheet exposures)	1,385,230
11	(Adjustment for prudent valuation adjustments and specific and general provisions which have reduced Tier 1 capital)	
EU-11a	(Adjustment for exposures excluded from the total exposure measure in accordance with point (c) of Article 429a(1) CRR)	
EU-11b	(Adjustment for exposures excluded from the total exposure measure in accordance with point (j) of Article 429a(1) CRR)	
12	Other adjustments	(14,621,805)
13	Total exposure measure	4,085,331

Template EU LR1 - LRSum: Summary reconciliation of accounting assets and leverage ratio exposures

Adjustment for derivative financial instruments corresponds to the difference between the accounting value of the foreign exchange derivatives recognised as assets and the leverage ratio exposure value as determined by application of Article 429c CRR.

Adjustment for SFT corresponds to the add-on for counterparty credit risk and counterparty credit risk for SFT transactions exposures by application of points (a) and (c) of Article 429(4) in conjunction with Article 429e CRR.

Adjustment for off-balance sheet items corresponds to the exposures arising from ASL transactions calculated in accordance with Article 429f and Article 111(1) CRR.

Other adjustments include the deduction of exposures due to banking-type ancillary services of CSD in accordance with point (o) of Article 429a(1) CRR as well as valuation differences arising from the usage of different FX rates and accounting standards.

In application of Article 451(1) CRR following table provides the information on the calculation of the leverage ratio and the breakdown of total exposure measure on 31 December 2022 and 31 December 2021. The on-balance sheet exposures are the biggest make-up for the exposure measure for the leverage ratio. In addition to the on-balance sheet items, the off-balance sheet items (for ASL business see 10.4.6), derivatives and SFT exposures (for reverse repurchase agreements see 10.4.5) are considered to determine the leverage ratio exposure measure and the leverage ratio. As authorized CSD, Clearstream Banking S.A. deducts the exposures arising from banking-type ancillary services of in accordance with point (o) of Article 429a(1) CRR. During the transitional period no derogation for the capital measure from Part Ten CRR (Article 499 CRR) were used.

(in 000 of €)		CRR leverage ratio exposures	
		(a)	(b)
		31/12/2022	31/12/2021
On-balance sheet exposures (excluding derivatives and SFTs)			
1	On-balance sheet items (excluding derivatives, SFTs, but including collateral)	11,471,472	10,213,442
2	Gross-up for derivatives collateral provided, where deducted from the balance sheet assets pursuant to the applicable accounting framework		
3	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)		
4	(Adjustment for securities received under securities financing transactions that are recognised as an asset)		
5	(General credit risk adjustments to on-balance sheet items)		
6	(Asset amounts deducted in determining Tier 1 capital)	(5,298)	(35,845)
7	Total on-balance sheet exposures (excluding derivatives and SFTs)	11,466,174	10,177,596
Derivative exposures			
8	Replacement cost associated with SA-CCR derivatives transactions (ie net of eligible cash variation margin)	14,025	
EU-8a	Derogation for derivatives: replacement costs contribution under the simplified standardised approach		
9	Add-on amounts for potential future exposure associated with SA-CCR derivatives transactions	86,786	
EU-9a	Derogation for derivatives: Potential future exposure contribution under the simplified standardised approach		
EU-9b	Exposure determined under Original Exposure Method		320,880

10	(Exempted CCP leg of client-cleared trade exposures) (SA-CCR)		
EU-10a	(Exempted CCP leg of client-cleared trade exposures) (simplified standardised approach)		
EU-10b	(Exempted CCP leg of client-cleared trade exposures) (Original Exposure Method)		
11	Adjusted effective notional amount of written credit derivatives		
12	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)		
13	Total derivatives exposures	100,811	320,880
Securities financing transaction (SFT) exposures			
14	Gross SFT assets (with no recognition of netting), after adjustment for sales accounting transactions	5,622,397	4,269,441
15	(Netted amounts of cash payables and cash receivables of gross SFT assets)		
16	Counterparty credit risk exposure for SFT assets	22,661	12,193
EU-16a	Derogation for SFTs: Counterparty credit risk exposure in accordance with Articles 429e(5) and 222 CRR		
17	Agent transaction exposures	34,127	32,063
EU-17a	(Exempted CCP leg of client-cleared SFT exposure)		
18	Total securities financing transaction exposures	5,679,185	4,313,697
Other off-balance sheet exposures			
19	Off-balance sheet exposures at gross notional amount	1,385,230	886,325
20	(Adjustments for conversion to credit equivalent amounts)		
21	(General provisions deducted in determining Tier 1 capital and specific provisions associated with off-balance sheet exposures)		
22	Off-balance sheet exposures	1,385,230	886,325
Excluded exposures			
EU-22a	(Exposures excluded from the total exposure measure in accordance with point (c) of Article 429a(1) CRR)		
EU-22b	(Exposures exempted in accordance with point (j) of Article 429a(1) CRR (on and off balance sheet))		
EU-22c	(Excluded exposures of public development banks (or units) - Public sector investments)		
EU-22d	(Excluded exposures of public development banks (or units) - Promotional loans)		
EU-22e	(Excluded passing-through promotional loan exposures by non-public development banks (or units))		
EU-22f	(Excluded guaranteed parts of exposures arising from export credits)		
EU-22g	(Excluded excess collateral deposited at triparty agents)		
EU-22h	(Excluded CSD related services of CSD/institutions in accordance with point (o) of Article 429a(1) CRR)	(14,546,069)	(11,194,924)
EU-22i	(Excluded CSD related services of designated institutions in accordance with point (p) of Article 429a(1) CRR)		
EU-22j	(Reduction of the exposure value of pre-financing or intermediate loans)		

EU-22k	(Total exempted exposures)	(14,546,069)	(11,194,924)
Capital and total exposure measure			
23	Tier 1 capital	1,008,281	1,214,206
24	Total exposure measure	4,085,331	4,503,574
Leverage ratio			
25	Leverage ratio (%)	24.68%	26.96%
EU-25	Leverage ratio (excluding the impact of the exemption of public sector investments and promotional loans) (%)	24.68%	26.96%
25a	Leverage ratio (excluding the impact of any applicable temporary exemption of central bank reserves) (%)	24.68%	26.96%
26	Regulatory minimum leverage ratio requirement (%)	3.00%	3.00%
EU-26a	Additional own funds requirements to address the risk of excessive leverage (%)	n/a	n/a
EU-26b	of which: to be made up of CET1 capital		
27	Leverage ratio buffer requirement (%)	n/a	n/a
EU-27a	Overall leverage ratio requirement (%)	3.00%	3.00%
Choice on transitional arrangements and relevant exposures			
EU-27b	Choice on transitional arrangements for the definition of the capital measure	Fully phased in	Fully phased in
Disclosure of mean values			
28	Mean of daily values of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivable	7,660,358	6,465,408
29	Quarter-end value of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables	5,622,397	4,269,441
30	Total exposure measure (including the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	6,123,292	6,699,541
30a	Total exposure measure (excluding the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	6,123,292	6,699,541
31	Leverage ratio (including the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	16.47%	18.12%
31a	Leverage ratio (excluding the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	16.47%	18.12%

Template EU LR2 - LRCom: Leverage ratio common disclosure

In accordance with point (b) of Article 451(1) CRR following templates provides the information on the breakdown of on-balance sheet exposures.

(in 000 of €)		(a)
		CRR leverage ratio exposures
EU-1	Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures), of which:	2,497,329
EU-2	Trading book exposures	
EU-3	Banking book exposures, of which:	2,497,329
EU-4	Covered bonds	
EU-5	Exposures treated as sovereigns	2,116,578
EU-6	Exposures to regional governments, MDB, international organisations and PSE, not treated as sovereigns	119
EU-7	Institutions	228,601
EU-8	Secured by mortgages of immovable properties	
EU-9	Retail exposures	
EU-10	Corporates	119,984
EU-11	Exposures in default	2,063
EU-12	Other exposures (eg equity, securitisations, and other non-credit obligation assets)	29,985

Template EU LR3 - LRSpl: Split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures)

Given the size of the on-balance sheet exposures, and in accordance with Article 451(1)(d) and (e) CRR, in conjunction with Article 6 of Regulation (EU) No 2021/637, Clearstream Banking S.A. is required to provide following information specified in template EU LRA.

Row	
(a)	Description of the processes used to manage the risk of excessive leverage
(b)	Description of the factors that had an impact on the leverage ratio during the period to which the disclosed leverage ratio refers

Table EU LRA - Disclosure of LR qualitative information

To facilitate the reading the relevant information is provided as free text below.

Point (a)

Clearstream processes large daily volumes of client transactions, which are collateralised by either cash or pledged securities. Cash collateral received is reinvested in short maturity transactions with low credit and market risk. This increases the total leverage exposure of Clearstream. The resulting leverage ratio therefore reflects both transaction volume at the reporting date and client use of cash (rather than pledged securities) as collateral.

Clearstream is able to manage its leverage ratio relative to prudential norms through

balance sheet and client collateral allocation strategies. CBL continues to monitor CRD V developments as part of its medium-term planning.

The leverage exposure and ratio are primarily influenced by the volume of client deposits, and the corresponding actions taken by Clearstream to place these funds in the market in as low risk a way as possible through on-balance sheet placements and securities financing transactions. The impact from the increase of client activity is counterbalanced by the deduction of corresponding exposures according to the provisions of Article 429a(1)(o) CRR. In addition to the increase in on-balance exposures compared to 2021, the off-balance sheet exposures from ASL business has increased significantly impacting the leverage ratio of CBL.

Point (b)

In August 2022, CBL exceeded for three consecutive months the absolute threshold of EUR 100 mn set out in Article 273a CRR allowing the usage of original exposure method (OEM) for the calculation of counterparty credit risk. As replacement of OEM CBL applied standardised approach for counterparty credit risk (SA-CCR) for FX derivatives starting from December 2022 onwards.

8. Asset Encumbrance

8.1. Asset Encumbrance

The EBA specified the disclosure of information on asset encumbrance under Article 443 CRR with the EBA Guidelines on the disclosure of encumbered and unencumbered assets on 26 June 2014¹. The disclosures described below are made on the basis of this guideline. The values are calculated as medians for quarterly values reported in 2022.

	Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and		of which notionally eligible EHQLA and		of which EHQLA and HQLA		of which EHQLA and HQLA
(in 000s of €)	010	030	040	050	060	080	090	100
010 Assets of the reporting	374,152	-	-	-	20,761,995	10,893,176	-	-
030 Equity instruments	-	-	-	-	7,966	-	7,966	-
040 Debt securities	-	-	-	-	1,644,964	1,644,964	1,645,179	1,645,179
050 of which: covered bonds	-	-	-	-	-	-	-	-
060 of which: securitizations	-	-	-	-	-	-	-	-
070 of which: issued by general	-	-	-	-	726,369	726,369	726,583	726,583
080 of which: issued by financial	-	-	-	-	918,595	918,595	918,595	918,595
090 of which: issued by non-financial corporations	-	-	-	-	-	-	-	-
120 Other assets	374,152	-	-	-	19,109,065	9,248,212	-	-

Template EU AE1 - Encumbered and unencumbered assets (median values)

The next table shows the fair value of encumbered or unencumbered collateral received:

	Fair value of encumbered collateral received or own debt securities issued		Unencumbered	
		of which notionally eligible EHQLA and HQLA	Fair value of collateral received or own debt securities issued available for encumbrance	of which EHQLA and HQLA
(in 000s of €)	010	030	040	060
130 Collateral received by the disclosing institution	494,031	494,031	7,775,130	7,775,130
140 Loans on demand				
150 Equity instruments				
160 Debt securities	494,031	494,031	7,775,130	7,775,130
170 of which: covered bonds	0		0	
180 of which: securitisations				
190 of which: issued by general governments	295,110	295,110	6,948,335	6,948,335
200 of which: issued by financial corporations	151,470	151,470	825,199	825,199
210 of which: issued by non-financial corporations	0	0		
220 Loans and advances other than loans on demand				
230 Other collateral received				
240 Own debt securities issued other than own covered bonds or securitisations				
241 Own covered bonds and securitisations issued and not yet pledged				
250 TOTAL COLLATERAL RECEIVED AND OWN DEBT SECURITIES ISSUED	868,184	494,031		

Template EU AE2 - Collateral received and own debt securities issued (median values)

¹ Guidelines on disclosure of encumbered and unencumbered assets: <http://www.eba.europa.eu/documents/10180/741903/EBA-GL-2014-03+Guidelines+on+the+disclosure+of+asset+encumbrance.pdf/c65a7f66-9fa5-435b-b843-3476a8b58d66>
Pillar III Report
Clearstream Banking S.A.

The sources of encumbrance are shown in the following table:

(in 000s of €)		Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and securitisations encumbered
		010	030
010	Carrying amount of selected financial liabilities	462,916	868,184

Template EU AE3 - Sources of encumbrance

The institutions should disclose qualitative information on asset encumbrance using template EU AE4. To facilitate the reading of disclosure the relevant narrative is provided as free text below.

Row number	Qualitative information - Free format
(a)	General narrative information on asset encumbrance.
(b)	Narrative information on the impact of the business model on assets encumbrance and the importance of encumbrance to the institution's business model, which provides users with the context of the disclosures required in Template EU AE1 and EU AE2.

Table EU AE4 - Accompanying narrative information

Point (a)

The primary sources of encumbrance are the following:

- Securities repledged in repurchase agreements mainly done with Clearstream Banking AG account for 57% of total encumbered assets and collateral. Such securities are received as collateral through reverse repurchase agreements and are mostly eligible as HQLA;
- Accounts blocked for compliance purposes, representing 24% of total encumbered assets and collateral;
- The reverse amounts at the BCL and Monetary Authority of Singapore (MAS), representing 17% of encumbered assets and collateral; and
- Cash margin posted for derivatives and reverse repurchase agreements.

Furthermore, unencumbered assets are mainly related to the following positions:

- Loans on demand, representing 50%, and mainly consist of client liquidity that is placed overnight with the BCL and CCBs;
- Other loans and advances, representing 41%, that are mainly made up of repurchase agreements as described in [10.4.5. Repurchase Agreements](#);
- Another 8% of unencumbered assets consist of debt securities, which are extremely high-quality liquid assets (eHQLA); and
- The remaining amount is mainly other receivables and fixed assets.

Point (b)

However, as shown in the following tables, the overall encumbrance is low, as the business model of Clearstream does not suppose having any items that could lead to significant increase in encumbered assets. Client deposits are placed in a manner that they can be easily withdrawn. The volume of margined derivatives transactions is low and maintained only to cover market risks. The amounts of collateral pledged are also limited.

9. Operational risk

In application of Article 446 CRR institutions shall disclose risk management objectives and policies for operational risk using template EU ORA. To facilitate the reading the descriptive information is provided as free text in the following chapters.

Row number	Qualitative information - Free format	Disclosures chapter
(a)	Disclosure of the risk management objectives and policies	Chapter 4 Chapter 9
(b)	Disclosure of the approaches for the assessment of minimum own funds requirements	Chapter 9.3
(c)	Description of the AMA methodology approach used <i>(if applicable)</i>	Chapter 9.3
(d)	Disclose the use of insurance for risk mitigation in the Advanced Measurement Approach <i>(if applicable)</i>	Chapter 9.6

Table EU ORA - Qualitative information on operational risk

9.1. Operational risk overview

Clearstream's risk strategy, as described in [4. Risk management overview](#), also applies to the management of operational risk (hereinafter, "Operational risk," "OpRisk") and the three other risk categories: financial risk, business risk and pension risk. Defined in this risk strategy is the risk capital dedicated to cover losses resulting from operational risk, setting a limit for this risk type.

Operational risk can be differentiated according to the severity and frequency of losses. As operational risk management depends on the risk position of Clearstream, the general principles are as follows:

- All main risks are identified and analysed regarding the expected or real effect on frequency and severity.
- For risks with a low frequency but high severity, risk transfers are considered – for example, through insurance contracts.
- For risks with high frequency but low severity, risk reduction is considered – for example, by optimising processes.

The following chapter discloses the requirements laid down in Article 446 CRR 2, concerning the approach for the assessment of own-funds requirements for operational risk and Article 454 CRR 2 on the use of the Advanced Measurement Approach to operational risk.

Approaches are disclosed in upcoming chapters.

Operational risk capital is intended to represent the required risk capital for unexpected operational risk losses. As part of the AMA within Clearstream, a model for calculating operational risk capital requirements has been developed, based on the individual risk profile of the institution. In line with the common practice in other risk areas, capital requirements are calculated using the Value at Risk (VaR) concept. Based on a statistical

analysis of relevant data, a loss distribution is determined, which enables calculation of the required figures.

The model has been designed to have the following features:

- Capital requirements reflect the risk profile of Clearstream Banking S.A.
- Confidence levels can be adjusted according to the risk appetite of the bank.
- Incentives for proper risk management can be included in the model.
- Major risk drivers can be identified.
- Risk mitigation effects can be considered.
- Insurance policy is not considered as a risk mitigating affect in the Operational Risk capital model.

The model is explained in detail in subsequent chapters.

Insurance is an additional tool used by Clearstream to mitigate the impact of operational risk by transferring risks above a certain threshold to third parties through a comprehensive insurance program. To achieve the optimum risk/benefit versus premium ratio, insurance policies are negotiated either through insurance brokers or directly with highly rated insurers to purchase tailor-made policies reflecting the specificities of CBL's business. It is mentioned that risk mitigation effects are being considered within the AMA.

9.2. Governance

Operational risk represents a major risk class for the Bank, and one that is systemically managed and controlled. Clearstream follows an Advanced Measurement Approach (AMA) for calculating the regulatory capital requirement for operational risk. Thus, Clearstream established a comprehensive framework and set of instruments meeting the requirements from both a regulatory and a business perspective.

Since receiving regulatory approval in January 2008, CBL applies the AMA to calculate the capital requirements for operational risk.

Clearstream's risk strategy, as described in [4. Risk management overview](#), also applies to the management of operational risk and the other three risk categories, financial risk, business risk and pension risk. Defined in this risk strategy is the risk capital dedicated to cover losses resulting from operational risk, setting a limit for this risk type.

Operational risk can be differentiated according to the severity and frequency of losses. As operational risk management depends on the risk position of Clearstream, the general principles are as follows:

- All main risks are identified and analysed regarding the expected or real effect on frequency and severity.
- For risks with a low frequency but high severity, risk transfers are considered – for example, through insurance contracts.
- For risks with high frequency but low severity, risk reduction is considered – for example, by optimising processes.

The ultimate responsibility for operational risk management lies with the members of the Executive Board of Clearstream Banking S.A., who are supported by different units and functions. The five steps of the risk management process are key to the framework.

It is the responsibility of line management units to control operational risk within their area on a day-to-day basis. This includes the identification of suitable measures to mitigate operational risk, and to improve the effectiveness and efficiency of operational risk management. To achieve this target, the Executive Board appoints “operational risk representatives” for their respective area with a direct reporting line to the ultimate risk owner on the Executive Board.

The operational risk representative is the key contact for both the employees in the respective organisational unit as well as for Clearstream Risk Management. They also support their line management with all tasks regarding operational risk and are especially responsible for the collection of operational risk event data within their organisational unit. In addition, the operational risk representatives take an active role in further developing operational risk tools and instruments. They also coordinate operational risk training for their respective organisational unit.

9.3. Measurement

Operational risk capital is intended to represent the required risk capital for unexpected operational risk losses. As part of the AMA within Clearstream, a model for calculating operational risk capital requirements has been developed, based on the individual risk profile of the bank. Below table provides the information on operational risk own funds requirements, under the AMA, for the year 2022.

Banking activities		a	b	c	d	e
		Relevant indicator			Own funds requirements	Risk exposure amount
(in 000 of €)		Year-3	Year-2	Last year		
1	Banking activities subject to basic indicator approach (BIA)					
2	Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches					
3	<i>Subject to TSA:</i>					
4	<i>Subject to ASA:</i>					
5	Banking activities subject to advanced measurement approaches AMA	102,060	104,699	105,700	223,711	2,796,386

Template EU OR1 - Operational risk own funds requirements and risk-weighted exposure amounts

Although CBL uses AMA approach to calculate own funds requirements for operational risk, the table provides for information purposes relevant indicator calculated as per Article 316 CRR based on the following items:

- Interest receivable and similar income.
- Interest payable and similar charges.
- Income from shares and other variable/fixed-yield securities.
- Commissions/fees receivable.
- Commissions/fees payable.
- Net profit or net loss on financial operations.
- Other operating income.

Own fund requirements represent 8% of risk exposure amount measured as described below.

In line with the common practice in other risk areas, capital requirements are calculated using the Value at Risk (VaR) concept. Based on a statistical analysis of relevant data, a loss distribution is determined, which enables calculation of the required figures.

The model has been designed to have the following features:

- Capital requirements reflect the risk profile of the bank;
- Confidence levels can be adjusted according to the risk appetite of the bank;
- Incentives for proper risk management can be included in the model;
- Major risk drivers can be identified; and
- Risk mitigation effects can be considered.

Insurance policy is not considered as a risk mitigating affect in the Operational Risk capital model.

Input data for the model are results of a structured scenario analysis, as well as internal/external loss data and KRIs. If loss data is sufficiently available, the application of a statistical model gives a reliable estimate of the underlying risk represented by the data. However, some operational risk losses are not sufficiently available for all risk drivers. Additionally, internal loss data usually does not cover the extreme events apart from litigation with Office of Foreign Assets Control (OFAC) such cases have not occurred in the Bank so far. Internal loss data is used as input for the scenario analysis.

In addition, it is assumed that banks doing similar business also have similar risk profiles. If this assumption holds, publicly available losses or losses from a banking consortium could be used to fill the gap of missing internal loss information. However, Clearstream has a unique business model that, as of today, is not sufficiently represented in any bank consortium or public database. Therefore, Clearstream has decided to use external loss data only where appropriate. Furthermore, Clearstream decided to apply a statistical model to scenario losses that are created in a structured process by business experts. During this process, experts from all areas of the specific unit/Clearstream estimate the potential impact and the likelihood of a scenario loss.

The VaR model for the calculation of the operational risk capital uses internal and external loss data, Key Risk Indicators (KRIs), Risk Indicators (RIs) and scenarios as input. Internal and external loss data, as well as KRIs and RIs, enter the model indirectly by serving as the foundation of the Operational Risk scenario framework. The scenarios, which are subject to permanent validation, are the source of the parameters that determine the aggregate loss distribution generated by a Monte Carlo simulation. The quantile of that distribution represents the Value at Risk at the corresponding confidence level.

9.3.1. Aggregate loss distribution

The overall objective of the operational risk model is to simulate a loss distribution for a given time frame, which is one year (for regulatory purposes referred to as holding period in regulatory publications).

Combining the loss distributions for all scenarios by Monte Carlo simulation gives the required aggregate loss distribution. From the aggregate loss distribution, the required risk figures are derived.

- Expected loss: The expected loss is generally defined as the actual monthly statistical mean of the aggregated loss distribution (it indicates which annual loss the Company has to face on average over a long period of time). With regard to Clearstream the expected loss (in the context of following calculations) is defined, in particular, as the minimum of a) the amount of provisions, booked in the budget at the beginning of the year, to cover expected losses resulting from claims (against Clearstream) and b) the actual monthly statistical mean of the aggregated loss distribution.
- Value at Risk: The Value at Risk (VaR) is defined as the amount that is not exceeded in q percentile cases of all years. For internal purposes, 99.90 percentile as well as the 99.00 percentile are calculated. Any other percentile can also be derived from the aggregate loss distribution.
- Unexpected loss: The unexpected loss is generally defined as the difference between the 99.90 percentile VaR and the expected loss. The unexpected loss determines the regulatory capital requirements of CBL for operational risk.
- Expected shortfall to the q-percentile: Defined as the statistical mean of the loss distribution above the q-percentile. It is used as a proxy for the loss amount the specific unit/entity could face if the q-percentile is exceeded.

For effective day-to-day management of OpRisk, the Bank differentiates OpRisk into sixteen risk clusters. Operational Risk contains sixteen Risk Clusters:

- Compliance Risk;
- Contagion Risk;
- Corporate Tax Risk;
- Custody Risk;
- Information Security Risk;
- Information Technology Risk;
- Legal Risk;
- Model Risk;
- Operational Project Risk;

- People Risk;
- Physical Security Risk;
- Processing and Execution Risk;
- Product Tax Risk;
- Risk Management Risk;
- Secondary Reputational Risk; and
- Third-Party Risk.

The distributions of all operational risk scenarios in a “cluster” need to be combined to derive the aggregate loss distribution for a “cluster” and, based on that, the total loss distribution for operational risk. Clearstream implemented a Monte Carlo simulation, which enables the highly precise numerical determination of the loss distribution.

Assume that there are n operational risk scenarios in a simulation “cell”, where for each scenario i ($1 \leq i \leq n$):

- The frequency distribution follows a Poisson distribution with mean λ_i (calculated as $1 / \text{“frequency estimation”}$) for generic scenarios and the majority of specific scenarios, or a Bernoulli distribution with probability p_i (calculated as $1 / \text{“Frequency estimation”}$), only for such specific scenarios which have the nature of only possibly occurring once within the next 12 months, never more often; and
- The severity distribution follows a continuous uniform distribution with boundaries $a_i < b_i$ (which are a minimum and maximum loss of the scenario).

A single Monte Carlo simulation cycle is carried out in three steps:

- Generate for each operational risk scenario i ($1 \leq i \leq n$) a random number L_i of events for this scenario from a Poisson distribution (or in above mentioned specific cases a Bernoulli) with mean λ (or probability p);
- Generate for each operational risk scenario i ($1 \leq i \leq n$) loss amounts $l_{i,j}$ ($1 \leq j \leq L_i$) from a continuous uniform distribution with boundaries $a_i < b_i$. The loss amounts should be mutually independent; and
- Sum all loss amounts $l_{i,j}$ ($1 \leq i \leq n$, $1 \leq j \leq L_i$) to calculate the total loss amount of one year.

Repeating the Monte Carlo cycles numerous times gives a loss distribution for a “cluster” with the required accuracy. The current implementation of the model uses 25 million simulation trials.

9.3.2. Monte Carlo simulation

The underlying assumption that justifies this procedure is the independence of events of distinct risk classes. The loss data collection and scenario analysis are focusing on assessing the risk arising from individual OpRisk events, for example, a system outage or money laundering. Although not limited to these examples, the severity of an event depends on its direct financial impact and on subsequent losses that are caused by this event. In principle, two reasons for dependence between individual events exist. First, events triggered by preceding events could be captured separately. These events depend on each

other, which needs to be considered in the model. Second, different events could have the same underlying cause. Any change for the cause would affect all events, but not necessarily to the same extent. These two types of dependence need to be treated separately.

As part of the loss data collection and scenario analysis, the total impact of an event is considered, including the losses generated in other areas of the Bank because of the scenario event. These subsequent losses are estimated and documented within the risk scenario template as “related effects” and taken into consideration when estimating the severity of a risk scenario. During the scenario analysis process, the scenarios are not captured separately. Therefore, none of the scenarios depend on each other and can be treated in the model separately.

The risk classes that are the basis for the model are defined such that the allocation of events to these risk classes and the underlying main causes are mutually exclusive. Though, there could be events that cause subsequent losses or related effects that would relate to different risk classes. As an example, a terrorist attack leads to damage of physical assets (respective risk class is “damage to physical assets”) and subsequently also causes a business interruption with consequential claims from clients and loss of revenues (respective risk class would be “availability”). Also, stress situations such as a long-lasting system interruption (“availability” risk) could cause human errors and omissions leading to additional subsequent losses. However, these cross-driver events are captured within a loss scenario belonging to only one risk class. This approach ensures that the individual risk classes are independent and is essential for the zero-correlation assumption amongst different risk classes.

This means, from a statistical point of view, that neither linear nor higher order dependencies exist. An appropriate model for this situation is a zero-correlation model, in which the occurrence and the size of losses belonging to different risk types are generated completely randomly. Risk management carries out a regular monthly check of the reasonability of the quantified required capital. Therefore, monthly and yearly safeguards have been defined as follows. Whenever the total 99.90% VaR moves up or down by:

- at least 3% of its previous month value; or
- at least 10% of its previous year value.

The input data and the result must be examined to ensure the correctness of the figure. Explanation of any variation above the safeguards is included in the quarterly risk report.

9.4. Stress testing

To achieve a better understanding of the most significant risks and to adequately model capital requirements, Clearstream Risk Management runs stress tests every quarter. The stress testing aims to gauge the potential capital vulnerability to exceptional but plausible events. The stress test process is defined as follows:

- All scenarios agreed during the scenario analysis are generally considered when performing the stress test. When a stress test is not passed, it is repeated whilst excluding the scenario that caused the breach to identify all scenarios, which lead to

a failure to pass the corresponding stress test. In general, quite unlikely scenarios with a frequency rarer than one loss in 1,000 years are disregarded.

- The risk scenario with the biggest maximum loss is benchmarked with 80% of the Available Risk-Bearing Capacity (ARBC) as defined in the Clearstream risk strategy.
- A combined occurrence of several risk scenarios within one year is considered. In principle, any combination of existing risk scenarios is possible. However, the focus is on plausible events, considering the respective frequency of occurrence per risk scenario. The approach is to combine the two extreme scenarios with the biggest maximum loss and a frequency not lower than one loss in 100 years and benchmark against 80% of the ARBC.
- In order not to focus only on extreme scenarios, the combination of non-extreme scenarios (frequency higher than one loss in 20 years) are also assessed. In this respect, three non-extreme risk scenarios with the biggest maximum loss are combined, and the total loss amount is benchmarked with 80% of the overall ARBC.

These stress tests are carried out when validating the outcome of the scenario analysis review. If the specific stress tests defined above exceed 85% of the available Risk-Bearing Capacity reporting threshold, the Executive Board is informed. In addition to the stress tests defined above, Clearstream Risk Management might test other combinations of scenarios to obtain a better understanding of the appropriateness of the calculated capital requirements.

If the outcome of the regular or the ad hoc scenario review changes the OpRisk landscape of the bank, ad hoc stress tests are performed. These changes involve altering a scenario already included in OpRisk stress tests or changing the composition of the stress tests, that is, including a new scenario. The deletion of a scenario does not trigger an ad hoc stress test as the risk only can decrease and not increase.

A reverse stress test for operational risk is performed as well. It assumes the materialisation of several operational risk scenarios (frequency not rarer than one loss in 1,000 years). A sufficient number of operational risk scenarios are chosen so that the losses would exceed the total ARBC. Scenarios that already exceeded the ARBC in the first stress test are not considered.

9.5. Mitigation

As laid out in its [risk strategy](#), Clearstream gives considerable attention to its risk mitigation process. The aim is to reduce the frequency and severity of potential operational risk events. The process comprises several quality and control initiatives whose objective is to ensure that Clearstream's operations have sufficient controls to prevent any fraud or operational service deficiency. If an event of this kind occurs in Clearstream's operations, a thorough analysis is performed to be in the position to define measures to reduce the probability of recurrence.

The key preventive measures of risk mitigation consist of robust internal control processes and ongoing initiatives to further reduce errors and omissions. This is supported by many measures that will take effect at the time or after an incident, such as Business Continuity Management (BCM) and insurance programs.

9.5.1. Internal Controls

The Executive Board of CBL has implemented an internal control system, designed to ensure the effectiveness and profitability of the business operations, prevent or detect financial loss and thus protect all its business assets. Clearstream's internal control system, an integral part of the risk management system, is continuously developed and adjusted to reflect changing conditions. It comprises both integrated and independent control and safety measures. In 2018, Clearstream established the Control Assurance & Monitoring (CAM) function to further enhance the documentation and monitoring of the internal control system. Internal Audit carries out risk-oriented and process-independent controls to assess the effectiveness and appropriateness of the internal control system.

9.5.2. Business continuity management

Within the operational risk framework, Clearstream has implemented a comprehensive Business Continuity Management (BCM) as the unavailability of core processes and resources poses a substantial risk to Clearstream and is a potential systemic risk for financial markets in general. The BCM framework encompasses precautionary measures and effective responses to mitigate the impact of incidents and ensure continuity of critical business processes at an acceptable level. Business Continuity Plans are developed, maintained and tested regularly to ensure overall readiness.

9.5.2.1. BCM organisation at Clearstream

The Executive Board is responsible for ensuring the continuity of business at Clearstream Banking S.A. This responsibility is delegated to the various organisational units, which are directly responsible for the operational resilience and disaster tolerance of their respective business areas. Reporting to executive management, the Business Continuity Management function is responsible for the overall coordination, monitoring and assessment of Clearstream's preparedness to deal with incidents and crises.

The organisational roles and responsibilities and the guiding principles to ensure operational resilience are documented in a formal BCMS policy.

9.5.2.2. BCM arrangements

The implemented BCM arrangements aim to minimise the impact of the unavailability of key resources and address the unavailability of systems, workspace, staff and suppliers to ensure the continuity of the most critical operations on a minimum business continuity objective level. Clearstream also leverages on its operational locations in Cork, Eschborn, London, Luxembourg, Prague and Singapore to maintain the continuity of its services.

9.5.3. Systems unavailability

Data centres are geographically distributed to form active centres, acting as backups of each other. Data is mirrored in real time across the data centres. The infrastructure is designed to ensure the online availability and integrity of all transactions to limit the impact due to any disruption.

9.5.4. Workspace unavailability

Exclusively dedicated backup workspace facilities provide backup office space for mission-critical functions requiring onsite presence if an office location becomes unavailable. Backup facilities are fully equipped, networked and operationally available at all times. Moreover,

business transfer capabilities between Clearstream's different operational locations and remote working can be used to further mitigate workspace unavailability.

9.5.5. Staff unavailability

Business continuity solutions also cover the significant unavailability of staff, for example, during a pandemic-related incident or terrorist attacks. Solutions are designed to ensure that the minimum staff and skills required are available. Staff dispersal and business transfer capabilities between Clearstream's different locations are in place where available in order to support in case any location is impacted. Mission-critical activities can be continued by staff in other locations or staff working remotely, for example, to mitigate cross contamination risks. Measures are defined to mitigate the availability risks during a widescale pandemic, either with a regional or cross regional impact. Focus is on ensuring the well-being of staff, for example, by rotational working or remote working, thus ensuring staff availability. Measures are adaptable to also adhere to any recommendations or directives issued by local authorities.

9.5.6. Supplier unavailability

Clearstream ensures the continuous provision of critical supplier services by several means, such as regular due diligence reviews of suppliers' BCM arrangements, provision of services by alternative suppliers where possible, and service level agreements describing minimum service levels and contingency procedures.

9.5.7. Incident and crisis management process

A Group-wide incident and crisis management response structure is implemented to support the activation, escalation and control of the organisation's response in the event of a disruption. The response structure ensures structured and effective mechanisms that facilitate a coordinated response and rapid reaction to an incident or crisis. The process aims to minimise business and market impact, enabling a swift recovery and return to regular business activity.

Incident managers are appointed in the respective business areas and act as single points of contact if there are incidents and crises to ensure the appropriate response mechanisms are activated and to ensure an escalation up to the Executive Board and the notification of clients as well as other relevant external parties if necessary.

9.5.8. "Real-life" simulation testing

Clearstream has adopted a comprehensive and ambitious business-continuity testing approach that simulates scenarios as close as possible to real-life situations whilst reducing associated risks and avoiding client impacts. BCM plans are tested regularly, at least annually in an announced and unannounced method.

BCM test results are validated against the following objectives:

- Functional effectiveness: Validating all technical functionalities.
- Execution ability: Staff must be familiar with and knowledgeable in the execution of BCM procedures.
- Recovery time: The functions in the scope of the business continuity plans must be operational within the defined recovery time objective.

Test results are reported to the Executive Board. Clients are regularly invited to participate in Clearstream's annual IT-Disaster Recovery test to provide them with the direct assurance of Clearstream's BCM preparedness.

9.6. Insurance

Insurance is an additional tool used by Clearstream to mitigate the impact of operational risk by transferring risks above a certain threshold to third parties through a comprehensive insurance program. To achieve the optimum risk/benefit versus premium ratio, insurance policies are negotiated either through insurance brokers or directly with highly rated insurers to purchase tailor-made policies reflecting the specificities of CBL's business.

9.7. Monitoring & Reporting

The reporting approach laid out in [4.11 Risk monitoring and reporting](#) also applies to the management of operational risk. Operational risk is monitored in the context of the Internal Capital Adequacy Assessment (ICAAP) of Clearstream, which is defined centrally and calculated on a regular basis. For detailed information on ICAAP clients should refer to [4.12 ICAAP information](#).

10. Credit Risk

Institutions shall describe their risk management objectives and policies for credit risk by providing the information specified in template CRA below:

Qualitative disclosures		Report chapter
(a)	In the concise risk statement in accordance with point (f) of Article 435(1) CRR, how the business model translates into the components of the institution's credit risk profile.	Chapter 10.2
(b)	When discussing their strategies and processes to manage credit risk and the policies for hedging and mitigating that risk in accordance with points (a) and (d) of Article 435(1) CRR, the criteria and approach used for defining the credit risk management policy and for setting credit risk limits.	Chapters 10.2, 10.3, 10.4
(c)	When informing on the structure and organisation of the risk management function in accordance with point (b) of Article 435(1) CRR, the structure and organisation of the credit risk management and control function.	Chapters 10.2, 10.3, 10.4
(d)	When informing on the authority, status and other arrangements for the risk management function in accordance with point (b) of Article 435(1) CRR, the relationships between credit risk management, risk control, compliance and internal audit functions.	Chapter 10.4

Table EU CRA: General qualitative information about credit risk

To facilitate the reading this information is disclosed as free text in following chapters.

10.1. Sources of credit risk

As an O-SII, Clearstream has a dedicated focus on maintaining strong internal risk controls, limits, processes, and having a framework that encompasses a safe and stable financial institution. One example of this is through setting credit limits, which are mainly granted for the purpose of facilitating the settlement of securities transactions. Credit risk mainly arises from intraday credit, as well as from custody, securities financing, treasury operations, and settlement over the Bridge with Euroclear for CBL.

Sources of credit risk are assessed after considering all business segments, products and services. The Bank's list of sources of credit risk is updated annually (should changes occur) as part of our policies and risk inventory. These sources of credit risk include:

- Credit risk from settlement activities (including income events), that is, when CBL grants intraday credit (cash loans) to its participants, mainly to facilitate settlement activities, but also for cash withdrawals (that is, the credit risk relating to income events, FX trades, corporate actions requiring payment of exercise fees).
- Credit risk from its securities financing business: In the securities financing business, the ASL program provides opportunities for borrowers to avoid settlement failures, and for lenders to earn additional income from their portfolios. Regarding ASL, the Bank is exposed to credit risk as it acts as a guarantor. Moreover, credit risk may arise from the ASLplus and ASL principal programs, where the Bank acts as a principal.
- Credit risk from treasury activities, including repos, reverse repos, FX trades, interest rate and currency swaps, and unsecured placements. This credit risk arises if the counterparty defaults prior to the performance of the respective obligation.

- Additionally, from a treasury investment perspective, issuer risk may arise from a credit event affecting an issuer of securities and resulting in either the deterioration of the market value of the securities or in the issuer's inability to pay amounts due.
- Credit risk from Bridge activities, in the event of a default of Euroclear Bank before having paid for securities already delivered by Clearstream.

10.2. Concise credit risk statement

Clearstream credit risk is in accordance with Article 435(1), 442 and 453 CRR 2, the following paragraph will provide required information on credit risk and credit risk mitigation as laid down in section 4.8 – Credit risk and general information on CRM in the EBA Guidelines on disclosure requirements under Part Eight of Regulation (EU) No 575/2013 and (EU) No 876/2019.

Credit is granted exclusively on a collateralised basis where prudent haircuts are applied to the pertinent collateral, apart from certain unsecured settlement limits granted to sovereign and supranational institutions based on the strong credit quality of these counterparts where zero risk weight is applied in line with Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 (CRR), Regulation (EU) No 876/2019 (CRR 2), and with specific approval by the Executive Board. Furthermore, credit limits are set for the placement of funds with counterparties; credit processing is arranged in guidelines and work instructions.

Continuing in the scope of credit limits, these are set in accordance with the client's financial standing, as indicated by factors such as the client's credit rating and net worth taking into account the level of activity in the client's accounts and level of collateralisation. The evaluation of counterparties and the credit risk classification takes place within the "credit assessment," which is performed by the Bank's credit division. A quarterly internal rating benchmarking exercise with regard to external sources is performed and internal ratings are adjusted when deemed necessary. The collateral recoverability is part of the tests performed by the Credit Default Management Team.

From a governance point of view, the Executive Board determines the governing principles within Clearstream's Credit Strategy. This includes overall credit granting criteria and ensuring that the Bank's credit activities executed within the framework are articulated within the Credit Strategy. The credit risk management function of Clearstream provides independent monitoring on all credit risk-related activities. It is also responsible for implementing the credit strategy, and developing policies and procedures aimed at identifying, measuring, monitoring, controlling, and reporting credit risk for all activities throughout Clearstream.

The credit risk management function is responsible for ensuring credit exposures remain within levels consistent with prudential standards and therefore within predefined limits. It ensures that exceptions to the Credit Policy, procedures, and limits are reported on a timely basis to the Executive Board, and other relevant functions. All members of the Executive Board are ultimately responsible for the risk strategy, which reflects the Bank's risk appetite

in defining the maximum loss the Executive Board is willing to assume in one year, the risk tolerance and desired performance levels.

Furthermore, risk management is a fundamental component of Clearstream's management and control framework. Overall effective and efficient risk management is vital to protect Clearstream's interests and simultaneously enabling it to achieve its corporate goals. Clearstream has established a Group-wide risk management system comprising roles, processes and responsibilities applicable to all employees and organisational units of Clearstream. This ensures that emerging risks are identified and managed as early as possible.

Clearstream's risk strategy is based upon the business strategy and regulates the extent of risks taken throughout the various business activities of Clearstream. Clearstream ensures this by determining conditions for risk management, risk control and risk limitation. Thus, Clearstream gives considerable attention to its risk mitigation process, and ensures that appropriate measures are taken to avoid, reduce, and transfer risk or, alternatively, to intentionally accept it. This means that timely and adequate control of risk must be ensured and information required for controlling risk is assessed using structured and consistent methods and processes. The results are collated and incorporated into a reporting system enabling measurement and control of risks. Consequently, risk reporting is based on reliable information and carried out on a regular basis and ad hoc, if necessary.

According to Article 178 CRR, a debtor is in default when either or both of the following conditions apply:

- The institution has material reason to consider that the obligor is unlikely to pay its (credit) obligations in full, without recourse by the institution to actions such as realising collateral (if held).
- The obligor is past due more than 90 successive calendar days on any material part of its overall credit obligation to the institution.

Clearstream's internal definition of "impairment" according to the International Financial Reporting Standards (IFRS) is compliant with the definition of "default" outlined in Article 178 of CRR.

The key figures for credit risk are provided in this report as part of risk-weighted capital in [Chapter 6.4](#) and in below disclosures in the use of [standardised approach](#) and [credit risk mitigation](#).

The concise risk statement of credit risk is approved as part of general [concise risk statement](#) in Chapter 4.

10.3. Public Disclosure: Article 28 of Regulation (EU) 2017/390

Clearstream Banking S.A. has been authorised under the Article 54 CSDR to provide banking-type ancillary services on 12 April 2021. In the set of related obligations, Article 28, for the purpose of the Article 18(1) of Regulation (EU) 2017/390 supplementing Regulation (EU) 909/2014 of the European Parliament and of the Council with regard to regulatory

technical standards on certain prudential requirements for central securities depositories and designated credit institutions offering banking-type ancillary services require the public disclosure of a comprehensive qualitative statement that specifies how credit risk, including intraday credit risk, is measured, monitored and managed on an annual basis.

To respond to the identified sources of credit risks described above, CBL has put in place controls and an operational framework to answer the prudential requirements on credit risk as per Regulation (EU) 2017/390 supplementing Regulation (EU) 909/2014.

Credit and Collateral Risk Management Framework

In conformity with Article 18(1) of the DR (EU) 2017/390, CBL has in place credit risk management framework that comply with the following requirements:

- (a) Measurement of intraday and overnight credit risk: CBL identifies and measures intraday credit risk exposure through analytical tools such as the Credit Exposure Monitoring Tool (CEMT). These tools enable the measurement and monitoring of credit exposures and credit limits at (i) account level, (ii) institution level, and (iii) Principal Holding level. More specifically, the identification and measurement of intraday credit risk is calculated at least daily for the metrics depending on external data availability and on ongoing basis. The CEMT relies on the latest intraday capture of the data from several source systems (credit, collateral, settlement, treasury, income, etc.) enriching its data set for an in-depth analysis and monitoring.
- (b) Monitoring of intraday and overnight credit risk: the monitoring activity is performed through a set of daily and monthly reports and controls with the measurement tools described above. These are used to monitor and report intraday and overnight credit exposures against limits and collateral, as well as credit concentration risks.
- (c) Management of intraday and overnight credit risk: through the combination of, among others, predefined credit limits, the monitoring, and the regular review of the creditworthiness of the individual participants, the collateral classification and valuation, early-warning signals, as well as the intraday and overnight credit exposure monitoring and reporting, CBL has appropriate risk-management tools in place to manage and control the identified credit risks.
- (d) Measure, monitor and manage the collateral and other equivalent financial resources: CBL ensures full coverage of credit exposures with collateral or other equivalent financial resources (such as an irrevocable letter of credit in favour CBL in the event of a credit event impacting the Bridge with Euroclear), as outlined in Article 59(3)(c) of CSDR Level 2. This collateral is automatically verified in real time basis and re-evaluations are performed intraday. The collateral eligibility criteria and haircuts are subject to strict rules in compliance with Articles 9 and Article 10(1)(2) of CSDR Level 2. CBL has in place daily monitoring of collateral concentration limits at both CSD and client level. The check for collateral coverage of credit exposures related to Bridge is performed via an automated control mechanism aiming at

maintaining the relative exposure resulting from the settlement between the ICSDs within the limits of a letter of credit. Furthermore, CBL has in place reports and controls to measure and monitor collateral on daily, monthly, and ad-hoc basis.

- (e) Analyses and plans how to address any potential residual credit exposures: To address any potential residual credit exposures [Article 25 of Delegated Commission Regulation 2017/390], CBL monitors and identifies potential residual credit exposures on a daily basis through a set of reports and analytical tools. According to the duration, amount, and other risk factors, including markets conditions and early warning signals, CBL has in place a framework for escalating and reporting of potential residual credit exposures.
 - Additionally, CBL has also implemented alerts notifying every time there is an unsecured exposure above a specific threshold. These alerts are integrated in the daily control mentioned above.
- (f) To comply with Article 59(3), point (i) CSDR and Article 26 DR 2017/390, Clearstream has put in place effective reimbursement procedures of intra-day credit and discourage overnight credit through the application of sanctioning rates which act as an effective deterrent. The sanctioning rates are applied to all overnight exposures, independent of their root cause (such as delay in covering their usage of the credit limits or operational corrections like reversals).
- (g) Report its credit risks to the relevant competent authorities: for the purpose of Article 27 of the DR (EU) 2017/390, CBL reports to the relevant competent authorities, on a monthly basis the metrics referred to in the corresponding Article 19, submits annually a qualitative statement that specifies how credit risk, including intraday credit risk, is measured, monitored and managed, and reports on ad-hoc basis any material change as well as breaches or risk of breaching Regulation (EU) 909/2014 daily, through their duration, until compliance is restored.
- (h) Publicly disclose its credit risks: For the purpose of Article 28 DR (EU) 2017/390, this chapter of the Pillar III Disclosure Report, serves as CBL's credit risk disclosure.

The policies and procedures referred to above are reviewed at least annually or ad-hoc in the event of a material changes.

CBL has in place monthly and quarterly internal reporting including the metrics described in Article 18(4) DR (EU) 2017/390 to the Executive Board and the Credit and Risk Governance Committee.

As per the "Credit and Collateral Risk Management Framework" described above, Clearstream, as CSD-banking service provider, has designed and implemented policies and procedures to comply with the requirements of Article 18 DR (EU) 2017/390.

10.4. Governance

Clearstream's general risk management structure, organisation, and process, as well as its risk strategy, are specified in [Chapter 4. Risk management overview](#). The present status and the business direction for credit risk are stated in a credit risk strategy. The Executive Board periodically examines and adjusts the credit risk strategy as necessary.

The credit risk strategy is set in accordance with the Risk Management Policy and reported annually to the Supervisory Board. The credit risk strategy represents the framework and defines, the principles, credit risk appetite, the credit authorities, collateral eligibility, the basic counterparty quality, as well as the fundamental country and currency risk categories. The credit risk strategy is translated into a limit system, which is also monitored regularly and ad hoc.

Clients should refer to the [Concise Risk Statement](#) above for additional information.

The credit risk management section manages country risk by setting limits for each country based on the country's internal credit rating. Currency limits are established for non-major currencies to cover currency exposure. Any exception to the Credit Risk Policy must be approved by the Executive Board. All credit risk exposures are regularly reviewed and monitored. In addition, Clearstream conducts special reviews when information indicating an adverse change in the risk assessment of the exposure or collateral is received from external and internal sources.

The exposure limit, mentioned above, is set to ensure that Clearstream does not take on a very large exposure, resulting in excessive risk, by attributing it on too few participants or counterparties. Luxembourg banking regulations also impose risk concentration limits that must be respected for each applicable exposure. The exposures after credit risk mitigation techniques, that is collateral, to an individual client or group of connected clients above 25% of own funds, are reported as a breach under the Large Exposures regulation.

Credit risk control is performed by the credit risk management section, and is an independent function, while working across the organisation to ensure stable credit risk management. The credit risk management section is responsible for issuing a monthly credit report to the Executive Board and Group Risk Monitoring, as well as for credit exposure reporting to Group Risk Monitoring, which forms the basis of the credit VaR calculations.

10.4.1. Use of Standardised Approach

As per Article 444 CRR, institutions using standardized approach to calculation of credit risk shall disclose the information by following the guidance for template EU CRD.

Legal basis	Row number	Qualitative information - Free format
Article 444 (a) CRR	(a)	Names of the external credit assessment institutions (ECAIs) and export credit agencies (ECAs) nominated by the institution, and the reasons for any changes over the disclosure period;
Article 444 (b) CRR	(b)	The exposure classes for which each ECAI or ECA is used;
Article 444 (c) CRR	(c)	A description of the process used to transfer the issuer and issue credit ratings onto comparable assets items not included in the trading book;

Article 444 (d) CRR	(d)	The association of the external rating of each nominated ECAI or ECA (as referred to in row (a)) with the risk weights that correspond with the credit quality steps as set out in Chapter 2 of Title II of Part Three CRR (except where the institution complies with the standard association published by the EBA).
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Table EU CRD – Qualitative disclosure requirements related to standardised model

Article 444(a) and (b) CRR

Prior to August 2020, for the exposure class pertaining to central governments and central banks, Clearstream used the credit assessments by the OECD². In addition, Clearstream also nominated the external credit assessment institution (ECAI) Standard & Poor’s for the same exposure class, because OECD stopped assessing so-called “high-income countries” in 2013. In August 2020, external credit assessment institutions Fitch and Moody’s were added as nominated ECAIs and Luxembourg supervisor was notified accordingly. For the “regional governments or local authorities” and “public sector entities” and “institutions” (credit institutions, investment firms and other dedicated financial counterparties) exposure classes, the dedicated risk weight is derived from that of the respective country of domicile.

Article 444(c) CRR

The risk transfer of the credit rating between the issuer and the issue is used solely for debt securities in own investment portfolio and received as collateral for credit risk mitigation for the securities issued by central governments and assimilated if issue rating is not available.

Article 444(d) CRR

CBL applies standard association of ECAI ratings to risk weights published by EBA.

The exposures of Clearstream are mainly to the exposure classes of institutions (54% of original exposures including SFT), corporates (29%) and central governments or central banks (14%); the remainder are shown below with the accompanying risk weight. The current exposures to central governments and central banks are mainly risk-weighted at 0%. Exposures to institutions generally have a short original maturity of less than or equal to three months. Therefore, under Article 120 paragraph 2 CRR the risk weight is 20%. The risk weighting for multilateral development banks is in most cases 0%. All other exposures in the different exposure classes mostly achieve the prescribed risk weighting of an unrated position (“unrated” implies that no credit rating by an eligible ECAI exists or no ECAI has been nominated for that purpose). Clearstream complies with the risk weighting as defined in Section 2, Chapter 2 of Part 3, Title II CRR. The templates below show the breakdown of exposures in exposure classes in CRR and applied risk weights for each exposure class.

² Country risk classification: <http://www.oecd.org/tad/xcred/crc.htm>.
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(in 000 of EUR)		Exposures before CCF and before CRM		Exposures post CCF and post CRM		RWAs and RWAs density	
Exposure classes		On-balance-sheet exposures	Off-balance-sheet exposures	On-balance-sheet exposures	Off-balance-sheet exposures	RWAs	RWAs density (%)
		a	b	c	d	e	f
1	Central governments or central banks	8,421,333		8,421,333		1,541	0%
2	Regional government or local authorities	203,222		203,222		1	0%
3	Public sector entities	903,092		903,092		19	0%
4	Multilateral development banks	375,774		375,774		4	0%
5	International organisations	110,723		110,723		-	0%
6	Institutions	1,291,246	575,397	1,291,246	34,000	265,366	20%
7	Corporates	134,034	809,833	134,034	126	134,216	100%
8	Retail						
9	Secured by mortgages on immovable property						
10	Exposures in default	2,063		2,063		3,094	150%
11	Exposures associated with particularly high risk						
12	Covered bonds						
13	Institutions and corporates with a short-term credit assessment						
14	Collective investment undertakings						
15	Equity	7,232		7,232		7,232	100%
16	Other items	21,652		21,652		21,647	100%
17	TOTAL	11,470,372	1,385,230	11,470,372	34,127	433,120	4%

Template EU CR4 – standardised approach – Credit risk exposure and CRM effects

(in 000 of EUR)		Risk weight															Total	Of which unrated
Exposure classes		0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1250%	Others	p	q
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o		
1	Central governments or central banks	8,418,056				1,901		431			945						8,421,333	
2	Regional government or local authorities	203,219				4											203,222	203,222
3	Public sector entities	902,998				94											903,092	903,092
4	Multilateral development banks	375,753				21											375,774	375,774
5	International organisations	110,723															110,723	110,723
6	Institutions		23,439			1,286,688		15,120									1,325,247	1,325,247
7	Corporates									134,049	111						134,160	134,160
8	Retail exposures																	
9	Exposures secured by mortgages on immovable property																	
10	Exposures in default											2,063					2,063	2,063
11	Exposures associated with particularly high risk																	
12	Covered bonds																	
13	Exposures to institutions and corporates with a short-term credit assessment																	
14	Units or shares in collective investment undertakings																	
15	Equity exposures									7,232							7,232	7,232
16	Other items	5								21,647							21,652	21,652
17	TOTAL	10,010,754	23,439			1,288,708		15,550			163,873	2,174					11,504,499	3,083,165

Template EU CR5 – standardised approach

For the purposes of breakdown below SFT exposures under the use of the standardised approach are reported separately as follows:

(in 000 of EUR)		Exposures before CCF and before CRM		Exposures post CCF and post CRM		RWAs and RWAs density	
Exposure classes		On-balance-sheet exposures (repos)	Off-balance-sheet exposures (ASLplus)	On-balance-sheet exposures (repos)	Off-balance-sheet exposures (ASLplus)	RWAs	RWAs density (%)
		a	b	c	d	e	f
1	Central governments or central banks						
2	Regional government or local authorities						
3	Public sector entities						
4	Multilateral development banks						
5	International organisations						
6	Institutions	4,008,184	26,787,108	75,099	78,240	30,668	20.00%
7	Corporates	1,614,214	15,034,856	53,816	105,865	159,681	100.00%
8	Retail						
9	Secured by mortgages on immovable property						
10	Exposures in default						
11	Exposures associated with particularly high risk						
12	Covered bonds						
13	Institutions and corporates with a short-term credit assessment						
14	Collective investment undertakings						
15	Equity						
16	Other items						
17	TOTAL	5,622,397	41,821,964	128,915	184,104	190,349	60.81%

Template EU CR4 bis – standardised approach – Credit risk exposure and CRM effects (SFT)

	(in 000 of EUR)															Total	Of which unrated
	Risk weight																
Exposure classes	0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1250%	Others		
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
1 Central governments or central banks																	
2 Regional government or local authorities																	
3 Public sector entities																	
4 Multilateral development banks																	
5 International organisations																	
6 Institutions					153,339											153,339	153,339
7 Corporates										159,681						159,681	159,681
8 Retail exposures																	
9 Exposures secured by mortgages on immovable property																	
10 Exposures in default																	
11 Exposures associated with particularly high risk																	
12 Covered bonds																	
13 Exposures to institutions and corporates with a short-term credit assessment																	
14 Units or shares in collective investment undertakings																	
15 Equity exposures																	
16 Other items																	
17 TOTAL					153,339					159,681							313,020

Template EU CR5 bis – standardised approach (SFT)

10.4.2. Credit risk exposure distribution

In application of article 442 CRR the institutions shall provide qualitative and quantitative information on credit risk quality. The qualitative information shall be disclosed using instructions for template EU CRB.

Qualitative disclosures	
(a)	The scope and definitions of ‘past-due’ and ‘impaired’ exposures used for accounting purposes and the differences, if any, between the definitions of past due and default for accounting and regulatory purposes as specified by the EBA Guidelines on the application of the definition of default in accordance with Article 178 CRR.
(b)	The extent of past-due exposures (more than 90 days) that are not considered to be impaired and the reasons for this.
(c)	Description of methods used for determining general and specific credit risk adjustments.
(d)	The institution’s own definition of a restructured exposure used for the implementation of point (d) of Article 178(3) CRR specified by the EBA Guidelines on default in accordance with Article 178 CRR when different from the definition of forbore exposure defined in Annex V to Commission Implementing Regulation (EU) 680/2014.

Table EU CRB: Additional disclosure related to the credit quality of assets

The relevant information is provided as free text below.

10.4.2.1. Definition of past due

The CRR classifies an exposure as “past due” if a counterparty has failed to make a payment when contractually due, when the debtor has exceeded an external limit communicated to it, as well as when the debtor has utilised credit without prior consent.

All financial assets are subject to the impairment testing under current accounting standards, consequently there are no past-due exposures that are not considered to be impaired.

10.4.2.2. Definition of default or non-performing

According to Article 178 CRR, a debtor is in default when either or both of the following conditions apply:

- The institution has material reason to consider that the obligor is unlikely to pay its (credit) obligations in full, without recourse by the institution to actions such as realising collateral (if held).
- The obligor is past due more than 90 successive calendar days on any material part of its overall credit obligation to the institution.

Clearstream's internal definition of "impairment" according to the International Financial Reporting Standards (IFRS) is compliant with the definition of "default" outlined in Article 178 CRR.

Related to our definition of default or non-performing exposures, credit risk mainly arises in the short term and with credit institutions or governmental counterparties. Treasury counterparties, as well as CCBs for the operational network, are selected based on a high degree of creditworthiness and operational reliability. Due to the short-term nature of the business performed by Clearstream, strict internal guidelines and close monitoring of business, there have been no material credit losses at Clearstream since 1970.

10.4.2.3. Value adjustments and provisions

Clearstream assesses at each balance sheet date, whether there is objective evidence that a financial asset or group of financial assets is impaired, where appropriately applying the expected loss model as introduced by IFRS 9 Financial Instruments.

The losses represent a forward-looking measurement of future losses that are generally subject to estimates.

- Stage 1: The impairment upon initial recognition is measured on the basis of the expected losses in the event of default within the next twelve months after the reporting date.
- Stage 2: If a financial asset's credit risk has increased significantly, the expected credit loss is determined over the entire term. A significant increase in credit risk is determined individually using internal ratings and is assumed if there is a downgrade of three notches within the internal rating system.
- Stage 3: Credit-impaired financial assets are allocated to Stage 3 and the impairment is based on the full lifetime expected credit losses. This is the case if there are observable data of significant financial difficulties and there is a high risk of default, even if the definition of a default has not yet been met.

If, at the balance sheet date, there is an absolutely low credit risk for debt instruments measured at amortised cost and at fair value through other comprehensive income or for balances on nostro accounts for which the simplified impairment model is not applied, these remain in Stage 1 even if the default risk increases.

Within the Bank, the expected credit losses for trade receivables are measured based on the simplified approach, which requires lifetime expected losses to be recognised from initial recognition of a receivable.

Clearstream does not have material amounts of value adjustments and provisions for credit risk exposures at present, mainly because of its business model, which is focused on short-term lending activities to enable efficient and secure settlement processes, and the possibility to directly collect trade receivables within two (2) days.

10.4.2.4. Forborne exposures

As of 31 December 2022, there were no forbearance or restructuring measures applied by Clearstream to any clients' exposures.

10.4.2.5. Distribution of credit risk exposures

In application of points (c) to (g) of Article 442 CRR, the following paragraphs provide the information on the distribution of the credit risk exposures, both performing and non-performing, broken down by exposure classes, geographical area, industry, past-due status and residual maturity, as well as the information on related accumulated impairment and its changes during the year.

Building on the performing and non-performing exposures, on 31 December 2022, the allocation per exposure class is shown in the table below. As shown below, CBL holds its exposures with central and regional governments, central banks, PSEs, MDBs and financial entities. No retail or SME exposure were reported during the year under review. Most of the exposures held by Clearstream are with central banks and credit institutions, which account for 85% of on-balance exposures. Those counterparties are deemed to be in good standing, as shown by the performing nature.

Due to the current situation nostro account with Russian National Settlement depository, reported under loans and advances to financial corporations, was classified as IFRS stage 3 and fully impaired. Of the remaining non-performing exposures, EUR 0.4 mn is driven by credit institutions, however, they have not moved beyond their current stage in non-performance.

	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions						Accumulated partial write-off	Collateral and financial guarantees received		
	Performing exposures			Non-performing exposures			Performing exposures - accumulated impairment and provisions			Non-performing exposures - accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions				On performing exposures	On non-performing exposures	
	(in 000 of €)	Of which stage 1	Of which stage 2	Of which stage 2	Of which stage 3		Of which stage 1	Of which stage 2	Of which stage 2	Of which stage 3						
005	Cash balances at central banks and other demand deposits	9,650,897	9,650,897													
010	Loans and advances	5,784,646	5,784,646		134,943	134,080	(11)	(11)	(134,533)	(134,080)				5,599,736		
020	Central banks	5,764	5,764		145		(0)	(0)	(93)							
030	General governments	4,458	4,458													
040	Credit institutions	4,822,433	4,822,433		427		(0)	(0)	(221)					4,713,264		
050	Other financial corporations	932,110	932,110		134,338	134,080	(11)	(11)	(134,196)	(134,080)				886,473		
060	Non-financial corporations	19,881	19,881		33		(0)	(0)	(22)							
070	Of which SMEs															
080	Households															
090	Debt securities	1,591,684	1,591,684				(208)	(208)								
100	Central banks															
110	General governments	719,630	719,630				(208)	(208)								
120	Credit institutions	872,053	872,053													
130	Other financial corporations															
140	Non-financial corporations															
150	Off-balance-sheet exposures	1,385,230	1,385,230													
160	Central banks															
170	General governments															
180	Credit institutions	1,382,679	1,382,679													
190	Other financial corporations	2,551	2,551													
200	Non-financial corporations															
210	Households															
220	Total	18,412,457	18,412,457		134,943	134,080	(210)	(210)	-	(134,533)	(134,080)	-	5,599,736			

Template EU CR1: Performing and non-performing exposures and related provisions.

Due to the specificity of Clearstream business, the maturity of exposures is extremely short term. 57% of on-balance exposures are classified as on demand, while another 34% does not exceed one year and are mainly composed of reverse repurchase agreements with residual maturity under three months.

	(in 000 of €)	a	b	c	d	e	f
		Net exposure value					
		On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
1	Loans and advances	25,494	5,759,562				5,785,056
2	Debt securities		377,178	1,183,900	30,398		1,591,475
3	Total	25,494	6,136,740	1,183,900	30,398	-	7,376,531

Template EU CR1-A: Maturity of exposures

With exception for the impairment registered for Russian NSD (EUR 134 mn) there were no significant changes in the stock of non-performing and impaired loans. Most of the outflows are due to the write-offs.

	(in 000 of €)	a
		Gross carrying amount
010	Initial stock of non-performing loans and advances	1,391
020	Inflows to non-performing portfolios	134,607
030	Outflows from non-performing portfolios	(1,055)
040	Outflows due to write-offs	(1,055)
050	Outflow due to other situations	
060	Final stock of non-performing loans and advances	134,943

Template EU CR2: Changes in the stock of non-performing loans and advances

(in 000 of €)		a	b
		Gross carrying amount	Related net accumulated recoveries
010	Initial stock of non-performing loans and advances	1,391	
020	Inflows to non-performing portfolios	134,607	
030	Outflows from non-performing portfolios	(1,055)	
040	Outflow to performing portfolio		
050	Outflow due to loan repayment, partial or total		
060	Outflow due to collateral liquidations		
070	Outflow due to taking possession of collateral		
080	Outflow due to sale of instruments		
090	Outflow due to risk transfers		
100	Outflows due to write-offs	(1,055)	
110	Outflow due to other situations		
120	Outflow due to reclassification as held for sale		
130	Final stock of non-performing loans and advances	134,943	

Template EU CR2a: Changes in the stock of non-performing loans and advances and related net accumulated recoveries

The split of performing and non-performing loans by the count of days past-due is available in the following template. Most of past due exposures correspond to trade receivables where the amounts due for provision of services by Clearstream could not be debited directly on client accounts for various reasons (that is, clients under sanctions).

(in 000 of €)		a	b	c	d	Gross carrying amount/nominal amount							
		Performing exposures				Non-performing exposures							
		Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days			Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	Of which defaulted
005	Cash balances at central banks and other demand deposits	9,650,897	9,650,897										
010	Loans and advances	5,784,646	5,784,130	516	134,943	134,080	128	285	266	183			
020	Central banks	5,764	5,758	7	145		19	33	34	59			
030	General governments	4,458	4,458										
040	Credit institutions	4,822,433	4,822,413	21	427		59	148	171	48			
050	Other financial corporations	932,110	931,623	487	134,338	134,080	45	98	44	71			
060	Non-financial corporations	19,881	19,879	2	33		4	7	18	5			
070	Of which SMEs												
080	Households												
090	Debt securities	1,591,684	1,591,684										
100	Central banks												
110	General governments	719,630	719,630										
120	Credit institutions	872,053	872,053										
130	Other financial corporations												
140	Non-financial corporations												
150	Off-balance-sheet exposures	1,385,230											
160	Central banks												
170	General governments												
180	Credit institutions	1,382,679											
190	Other financial corporations	2,551											
200	Non-financial corporations												
210	Households												
220	Total	18,412,457	17,026,711	516	134,943	134,080	128	285	266	183			

Template EU CQ3: Credit quality of performing and non-performing exposures by past due days

Below template provides the information on the geographical breakdown of non-performing exposures. The full breakdown including performing exposures is included in the [Appendix B](#).

(in 000 of €)		a	b	c	d	e	f	g
		Gross carrying/nominal amount			Of which subject to impairment	Accumulated impairment	Provisions on off-balance-sheet commitments and financial guarantees given	Accumulated negative changes in fair value due to credit risk on non-performing exposures
			Of which non-performing	Of which defaulted				
010	On-balance-sheet exposures	134,943	134,943		134,943	(134,533)		
020	Belgium	1	1		1	(0)		
030	Brazil	14	14		14	(4)		
040	Canada	12	12		12	(9)		
050	Switzerland	25	25		25	(1)		
060	China	3	3		3	(0)		
070	Germany	1	1		1	(0)		
080	Denmark	0	0		0	(0)		
090	France	89	89		89	(45)		
100	United Kingdom	168	168		168	(69)		
110	Guernsey	5	5		5	(4)		
120	Greece	1	1		1	(0)		
130	Hong Kong	5	5		5	(5)		
140	Indonesia	12	12		12	(0)		
150	Ireland	15	15		15	(14)		
160	Italy	16	16		16	(8)		
170	Jersey	4	4		4	(2)		
180	Kuwait	0	0		0	(0)		
190	Cayman Islands	0	0		0	(0)		
200	Kazakhstan	0	0		0	(0)		
210	Luxembourg	308	308		308	(146)		
220	Oman	1	1		1	(1)		
230	Russian Federation	134,080	134,080		134,080	(134,080)		
240	Singapore	4	4		4	(0)		
250	United States of America	7	7		7	(6)		
260	Venezuela	161	161		161	(124)		
270	Virgin Islands	9	9		9	(9)		
280	Viet Nam	5	5		5	(4)		
290	Off-balance-sheet exposures	1,385,230						
300	Italy	6,300						
310	United Kingdom	819,924						
320	France	332,252						
330	Spain	98,569						
340	Germany	121,170						
350	Belgium	6,537						
360	Australia	479						
370	Total	1,520,173	134,943	-	134,943	(134,533)		

Template EU CQ4: Quality of non-performing exposures by geography

Although Clearstream deals primarily with institutions, central banks or central governments, there is a limited number of corporate counterparties, also mentioned in [10.4.1. Use of Standardised Approach](#). The next table shows the split of the defaulted and non-defaulted exposure per economic sector of the counterparty. On 31 December 2022, Clearstream's non-performing exposures were EUR 19.9 mn, and mostly consisted of information and communication counterparties, related to provision of services ancillary to Clearstream business. The biggest portion of this amount is allocated to intercompany exposure with Clearstream Services S.A. (EUR 19.2 mn). The vast majority of the carrying amount are performing.

(in 000 of €)		a	b	c	d	e	f
		Gross carrying amount			Of which loans and advances subject to impairment	Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
			Of which non-performing	Of which defaulted			
010	Agriculture, forestry and fishing						
020	Mining and quarrying	31			31		
030	Manufacturing	11			11		
040	Electricity, gas, steam and air conditioning supply	5			5		
050	Water supply						
060	Construction						
070	Wholesale and retail trade	44			44		
080	Transport and storage	31			31		
090	Accommodation and food service activities	25			25		
100	Information and communication	19,417	1		19,417	(1)	
110	Financial and insurance activities	2			2		
120	Real estate activities	0	0		0	(0)	
130	Professional, scientific and technical activities	131	24		131	(15)	
140	Administrative and support service activities	20	8		20	(7)	
150	Public administration and defense, compulsory social security						
160	Education						
170	Human health services and social work activities						
180	Arts, entertainment and recreation	190			190		
190	Other services	6			6		
200	Total	19,914	33		19,914	(22)	

Template EU CQ5: Credit quality of loans and advances to non-financial corporations by industry

While CBL reports exposures to corporate counterparties, provisions of Article 431(5) with regard to the explanation of rating decisions to SMEs and other corporate applicants for loans, is not applicable. Exposures to corporate counterparties are limited to intercompany recharges within the group and a small amount of various other receivables, which do not represent loans.

The following template provides the information on collateralisation of performing and non-performing on-balance exposures. The collateralised loans are limited to reverse repurchase agreements secured by high quality bonds.

(in 000 of €)		a	b	c	d	e	f	g	h	i	j	k	l	
		Loans and advances												
		Performing			Non-performing									
			Of which past due > 30 days ≤ 90 days	Unlikely to pay that are not past due or are past due ≤ 90 days			Past due > 90 days							
						Of which past due > 90 days ≤ 180 days	Of which: past due > 180 days ≤ 1 year	Of which: past due > 1 years ≤ 2 years	Of which: past due > 2 years ≤ 5 years	Of which: past due > 5 years ≤ 7 years	Of which: past due > 7 years			
010	Gross carrying amount	5,919,589	5,784,646	516	134,943	134,080	862	128	285	266	183			
020	Of which secured	5,622,397	5,622,397											
030	Of which secured with immovable property													
040	Of which instruments with LTV higher than 60% and lower or equal to 80%													
050	Of which instruments with LTV higher than 80% and lower or equal to 100%													
060	Of which instruments with LTV higher than 100%													
070	Accumulated impairment for secured assets													
080	Collateral													
090	Of which value capped at the value of exposure	5,599,736												
100	Of which immovable property													
110	Of which value above the cap	5,717,539												
120	Of which immovable property													
130	Financial guarantees received													
140	Accumulated partial write-off													

Template EU CQ6: Collateral valuation - loans and advances

No collateral was taken in possession due to default of counterparties, consequently the related templates are not disclosed.

10.4.3. Stress Testing

As part of a robust risk management framework, Clearstream performs stress tests on our credit risk function. The term “stress test” comprises the entirety of qualitative and quantitative analysis methods of rare but plausible events. There are two stress tests performed for credit risk:

- The “Default of the Largest Counterparty Group Stress Test,” where the default of the counterparty Group with the largest unsecured exposure is simulated monthly, after utilisation of all respective collateral and after taking the recovery rate into account.
- The “Economic Deterioration Stress Test,” where the impact on Clearstream of a deterioration of the economic environment is simulated monthly. To capture the worsening of the economy, certain credit risk model parameters are adjusted compared to the standard VaR simulation

The results of the “Default of the Largest Counterparty Group Stress Test” and the “Economic Deterioration Stress Test” are compared to limits, which are defined as a fraction of the available Risk-Bearing Capacity. The stress test results are reported to the Executive Board every quarter and semi-annually to the Supervisory Board.

In addition to the stress tests defined above, a “Reverse Credit Stress Test” is also performed, which aims to identify the number of unsecured credit lines that exceed the available risk-bearing capacity.

In 2021, the stress tests did not reveal any risks endangering the going concern of Clearstream’s business.

10.4.4. Mitigation

Disclosure requirements concerning credit risk mitigation are laid down in Section C EBA Guidelines on disclosure requirements under Part Eight of Regulation (EU) No 575/2013 and 876/2019 in conjunction with Article 453 CRR and CRR 2. Following information on mitigations technics should be disclosed as per template EU CRC.

Legal basis	Row number	Free format
Article 453 (a) CRR	(a)	A description of the core features of the policies and processes for on- and off-balance sheet netting and an indication of the extent to which institutions make use of balance sheet netting.
Article 453 (b) CRR	(b)	The core features of policies and processes for eligible collateral evaluation and management.
Article 453 (c) CRR	(c)	A description of the main types of collateral taken by the institution to mitigate credit risk.
Article 453 (d) CRR	(d)	For guarantees and credit derivatives used as credit protection, the main types of guarantor and credit derivative counterparty and their creditworthiness used for the purposes of reducing capital requirements, excluding those used as part of synthetic securitisation structures.
Article 453 (e) CRR	(e)	Information about market or credit risk concentrations within the credit mitigation taken.

Table EU CRC – Qualitative disclosure requirements related to CRM techniques

Article 453(a) CRR

The credit risk mitigation technique used by Clearstream Banking S.A. for solvency purposes is collateralisation. For Clearstream, only net positions are relevant.

The portfolio companies of Deutsche Börse Group are highly integrated and perform a variety of services for each other. Therefore, respective fees are invoiced, resulting in payables and receivables. To optimise cash flows and reduce payment efforts in situations with material cash flows in both directions, positions are held in current accounts based on netting agreements. Debits and credits are netted immediately and net positions are settled once a month.

Accounts with clients or CCBs are generally maintained on a current account basis. Therefore, all movements in these accounts and currencies are immediately netted to single account balances.

For credit purposes, except as otherwise agreed between the client and Clearstream, all client accounts with Clearstream, in whatever currency they are denominated, are deemed to form elements of a single, indivisible current account and Clearstream may at any time set off, in whole or in part, credit and debit balances standing to any accounts held by the client with Clearstream. Despite these netting options, no netting takes place for regulatory and risk management purposes. For credit purposes, cash credit positions from these arrangements are taken as cash collateral. For solvency purposes, this collateral is not considered.

With regards to the on-balance exposures only repurchase agreements are considered to be collateralised. For more information, clients should refer to [Chapter 10.4.5](#).

Other types of transactions, for which credit risk mitigation is used, are ASL and ASLplus transactions. More detailed information is available in chapters [10.4.6](#) and [10.4.7](#).

In the following table, all unsecured carrying amounts on 31 December 2022 were made up of other term loans, trade receivables, and overnight balances. For the purposes of template EU CR3 below the balances with central banks and demand deposits with credit institutions are excluded.

		Unsecured carrying amount	Secured carrying amount			
			Of which secured by collateral	Of which secured by financial guarantees	Of which secured by credit derivatives	
(in 000 of €)		a	b	c	d	e
1	Loans and advances	162,658	5,622,397	5,622,397		
2	Debt securities	1,591,475				
3	Total	1,754,133	5,622,397	5,622,397		
4	Of which non-performing exposures	410				
EU-5	Of which defaulted					

Template EU CR3 – CRM techniques overview: Disclosure of the use of credit risk mitigation techniques

Article 453(d) CRR

No guarantees and credit derivatives are used as credit protection.

10.4.4.1. Collateral (Article 453 (b), (c) and (e) CRR)

The purpose of the settlement credit limit is to facilitate the settlement of securities transactions against payment. Two types of settlement credit limit are currently available, the Technical Overdraft Facility (TOF) and the Unconfirmed Funds Facility (UCF). Under the Credit Terms and Conditions and the General Terms and Conditions, Clearstream Banking S.A. has a pledge on all client assets held in the client account(s) defined as pledge account(s) to secure client obligations to CBL for the services rendered by CBL to this client. These contracts are complemented by netting provisions permitting the offset of credit and debit balances standing to client accounts.

Collateral eligibility is defined and approved by the Credit section within the boundaries of the Credit Policy as approved by the Executive Board. Eligibility and haircut are dependent on the security’s credit, market, liquidity, and legal risks. The valuation is performed daily on the basis of latest available prices.

Article 453(c) CRR

Eligible collateral in the form of securities are subject to a margin deduction from their market value; haircuts range from 2% to 100% depending on the issue type, credit quality, security’s market and liquidity risks. The following instruments are eligible as collateral to support cash financing facilities:

- Fixed income securities with a minimum S&P, Fitch or Moody's rating of BBB-/Baa3, issued by sovereigns and central banks, local and regional governments, government agencies and supranational institutions, corporate and credit institutions;
- European covered bonds; and,
- Select equities included in STOXX Europe 50 and STOXX North America 50 indices.

In general, all securities not classified as eligible are ineligible as collateral, including the following:

- Investment funds;
- Warrants;
- Structured securities, for example, CDO, CLO, CLN, MBS;
- Own paper; and
- Subordinated securities.

Article 453(b) CRR

Collateral haircuts are automatically recalculated daily; the collateral policy is reviewed at least once a year. Client collateral positions are evaluated daily, based on prices received from various reliable securities data vendors. The system automatically blocks any transaction on a given account whose settlement requires more than the available collateral.

In the application of Article 453(f) and (g), information on exposure value covered by financial collateral, other collateral, guarantees, and credit derivatives is to be understood as information on outstanding secured exposures and the secured amount within those exposures. Please find the required information in the two tables here below:

As explained above, for loans provided to clients, exposures are secured by pledges on clients' accounts and all assets are held with Clearstream Banking S.A., and not via guarantees or credit derivatives. The debt instruments are of high quality, issued by central and regional governments, PSE, MDBs or large credit institutions. In the table below, the majority of the off-balance sheet guarantees and commitments are secured by eligible financial collateral.

Article 453(e) CRR

Credit limit concentration threshold relating to country group, client internal ratings and collateral as well as currency concentration limits are established and reported to the CBL Executive Board on a monthly basis.

In addition to the set up limits the exposures from collateral concentration are part of quarterly Large Exposures reporting according to Part Four CRR. In application of point 4 of Article 401 CRR when the eligible credit risk mitigation technique is used, the part of the exposure by which the exposure to the client has been reduced is reported as the exposure to the protection provider, meaning collateral issuer (mandatory substitution approach). However in application of Clearstream's policies on the eligibility of collateral the collateral the biggest exposures to collateral issuers are limited to the issuers qualifying for

exemptions set up in Article 400 CRR (central governments and assimilated with 0% risk weight).

For regulatory reporting purposes CBL applies financial collateral comprehensive method to calculate the effects of credit risk mitigation from exposures. For regulatory purposes, standard haircuts as per Article 224 CRR are applied. The haircuts are based on available issue ratings by nominated ECAs, namely Standard&Poor, Moody's and Fitch. For securities without own issue rating, issued by central governments and assimilated, the rating of the issuing central government is applied.

The information on exposures before and after risk mitigation is provided in [Chapter 10.4.1](#) in template EU CR4. ASL business is reported as off-balance exposures while exposures from repurchase agreements and ASLplus business, classified as securities financing transactions and hence neither on- nor off-balance exposures within COREP templates, are disclosed separately.

10.4.5. Repurchase Agreements

Clearstream Banking S.A. bases a significant part of the Group's liquidity on reverse repo agreements with a maximum maturity of one year, but usually with maturities of three months or less. Repo transactions must be governed by a Global Master Repurchase Agreement (GMRA) and are only concluded with banking counterparties fulfilling minimum rating criteria.

Repo transactions are settled via Clearstream's settlement system, or the Euroclear system via the "Bridge," or the domestic settlement systems of Clearstream's depositories. All settlement systems used are proven for that type of transaction.

Total exposure before application of credit risk mitigation and after credit risk mitigation as well as risk weighted assets is provided in Chapter 10.4.1 as part of template EU CR4.

Securities taken as collateral in repo-style transactions must fulfil specific requirements:

- Only the most liquid, least volatile and daily priced debt instruments with a defined credit rating (minimum long-term credit rating of Moody's [Aa3] or Standard & Poor's [AA-] or Fitch [AA-]); in the absence of a rating for the issue, the issuer rating (lowest available is relevant) are eligible as collateral for repo transactions;
- Issuers are limited to sovereigns, local governments, government agencies explicitly guaranteed by national governments, supranational banks and all issuers with an explicit sovereign or local government guaranty;
- Items not acceptable as collateral include ABS, MBS (RMBS and CMBS) and other forms of non-standard collateral (such as CDOs, derivative bonds, credit-linked bonds, callable bonds, perpetual bonds, warrants);
- All collateral must have an active market and must be liquid;
- Subordinated securities are not eligible;
- Transactions in which the securities given as collateral are issued by either the counterparty ("own assets") or an affiliate of the counterparty are not allowed. For this reason, specific wrong way risk is not a factor for Clearstream; and
- The maximum remaining life to maturity of the accepted securities is ten (10) years.

Cross-currency collateralisation is generally possible. It was not used for bilateral transactions but in the context of tri-party repos. Bilateral transactions must be “plain vanilla” on a single fixed-income security. In tri-party transactions (including Eurex Repo GC Pooling transactions), multiple fixed-income securities may be taken as collateral. Structured transactions are not allowed. Haircuts on the securities are applied within tri-party repo transactions (including Eurex Repo GC Pooling transactions). All collateral is valued daily. To secure the cash lent through reverse repurchase agreements, CBL agrees on margin calls with the repo counterparty daily to keep cash and collateral in balance.

For solvency purposes, according to Article 227 CRR, the application of zero volatility adjustments is possible in most cases. Where the conditions of the regulation stated above are not fulfilled, supervisory haircuts as laid down in Article 224 CRR apply. In cases of FX mismatch, further cross-currency haircuts are to be applied.

10.4.6. ASL

ASL (Automated Securities Lending) is a lending program that allows clients who are short of securities due to settlement failure to borrow securities from other Clearstream clients (lenders).

CBL acts as:

- Lending agent, offering:
 - Automatic detection of loan requirements to cover a failed trade;
 - Automatic identification of loan supply from ASL lenders;
 - Anonymous transfer of securities to the ASL borrower (the undisclosed relationship between lender and borrower); and
 - Administration of the loan.
- Collateral agent, monitoring the quality and sufficiency of collateral regarding:
 - Eligibility;
 - Collateral value;
 - Concentration limits;
 - Fluctuations in the market values of positions pledged as collateral (mark-to-market of the loan and the collateral);
 - Securities prices, reviewed several times a day depending on the closing time of the market; and
 - Automatic collateral substitution.
- Guarantor for the collateralised loans:
 - Underwriting the risk involved if the borrower defaults on its obligations;
 - Managing collateral securities pledged by the borrower to CBL; and
 - Assigning loan limits to borrowers to avoid any new loan opening if the limit is reached.

In the ASL program, each loan position is guaranteed by CBL. The guarantee is backed by securities pledged by the borrower, as follows:

- Collateral securities are pledged by the borrower to CBL under a first-ranking pledge under Luxembourg law. Collateral quality and sufficiency are monitored by CBL daily; and

- A second-ranking pledge on collateral in favour of the lender – in the unlikely event of a simultaneous default by CBL and the borrower, the right to the collateral passes to the lender.

The coverage value of the guarantee related to an ASL loan is equal to the market value of the securities plus an additional margin. Standard margins, varying from 0% to 15%, are applied depending on the securities lent.

The collateral eligibility criteria of the ASL program are the same as those for Clearstream's settlement engine. Collateral eligibility is defined and approved by the Credit section. Eligibility and haircut are dependent on the credit, market, liquidity and legal risks of the security.

Eligible securities are subject to a margin deduction from their market value; haircuts range from 2% to 100% depending on the issue type, credit quality, security's market and liquidity risks. Securities issued by or correlated to the client are not eligible as collateral. Collateral haircuts are automatically recalculated daily; collateral policy is reviewed at least once a year.

Clients' collateral positions are evaluated daily, based on prices received from various data vendors. The system automatically blocks any transaction on a given account whose settlement requires more than the available collateral.

Total exposure before application of credit risk mitigation and after credit risk mitigation as well as risk weighted assets is provided in Chapter 10.4.1 as part of template EU CR4.

10.4.7. ASLplus

The ASLplus program is a securities lending program that enables clients to enhance the revenues that can be realised as a lender by offering access to the wholesale trading market. Clearstream Banking S.A. acts as a principal to the lenders in ASLplus and lends on securities to market participants through various counterparties.

The Credit section defines collateralised securities borrowing limits for each borrower and credit limits are agreed based on standard framework agreements between CBL and each borrower. Generally, apart from limited exceptions, only securities rated A+³ and above are eligible for collateral with haircuts ranging from 2% to 15% depending on the issuer type. Furthermore, both the exposure and the collateral are subject to daily valuation and re-margining; the exposure and the collateral may be denominated in a different currency.

Mortgage-backed and other structured securities are not eligible as collateral.

To mitigate cross-currency risk in ASLplus, additional coverage is requested where there is a currency mismatch between a client's loan and collateral portfolios. The add-on haircut ranges from 0.8% (if the currency mismatch represents more than 20% of the exposure amount) to 3.2% (if it exceeds 80%) for more than three business days.

³ Securities rated below A+ are accepted with restrictive concentration limits for certain collateral schedules.
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The additional haircut requirement may be increased to the following levels if the foreign exchange mismatch amount exceeds the indicated thresholds:

- 3% for FX mismatch amount between EUR 2 bn and EUR 2.75 bn;
- 4% for FX mismatch amount between EUR 2.75 bn and EUR 3.5 bn;
- 6% for FX mismatch amount above EUR 3.5 bn.

Collateral for ASLplus business is delivered in a collateral pool serving several loans. Out of the pool, collateral with a value of at least the requested collateral value based on internal credit rules is blocked for the total of the associated loans. No allocation on a loan-by-loan basis is done for credit purposes.

As for the collateralised placing, a zero weighting as per the application of Article 227 CRR is generally possible. As the lending business covers a broader range of securities that do not fulfil the criteria laid down in Article 227 CRR, and the collateral given by the ultimate lender only partially fulfils these criteria, only a portion is zero weighted. For the remainder, the supervisory haircuts are applied. Since there is a notable portion of cross-currency collateralisation, additional FX haircuts are applied.

Total exposure before application of credit risk mitigation and after credit risk mitigation as well as risk weighted assets is provided in [Chapter 10.4.1](#) as part of template EU CR4.

10.4.8. Counterparty Credit Risk

As per Articles 439, 444 and 452 CRR, banks are required to disclose the counterparty credit risk regarding instruments referred to in Part Three, Title II, Chapter 6 CRR by following the instructions for the template EU CCRA. To facilitate the reading the relevant information is provided in the following chapters. Due to the very low volume of transactions subject to counterparty credit risk the disclosures are of limited applicability.

	Flexible format disclosure	Report chapter
(a)	Article 439 (a) CRR Description of the methodology used to assign internal capital and credit limits for counterparty credit exposures, including the methods to assign those limits to exposures to central counterparties	Chapter 10.4.8
(b)	Article 439 (b) CRR Description of policies related to guarantees and other credit risk mitigants, such as the policies for securing collateral and establishing credit reserves	Chapter 10.4.8
(c)	Article 439 (c) CRR Description of policies with respect to Wrong-Way risk as defined in Article 291 of the CRR	Chapter 10.4.8.1
(d)	Article 431 (3) and (4) CRR Any other risk management objectives and relevant policies related to CCR	Chapter 10.4.8.1 Chapter 10.4.8.2
(e)	Article 439 (d) CRR The amount of collateral the institution would have to provide if its credit rating was downgraded	Omitted as not material

Table EU CCRA – Qualitative disclosure related to CCR

The exposures to the counterparty credit risk are part of the general credit risk strategy, which is set in accordance with the Risk Management Policy and reported annually to the supervisory board. The credit risk strategy represents the framework and defines, amongst other things, the principles, credit risk appetite, the credit authorities, collateral eligibility,

the basic counterparty quality, as well as the fundamental country and currency risk categories.

Credit limits are set in accordance with the client's financial standing, as indicated by factors such as the client's credit rating and net worth taking into account the level of activity in the client's accounts and level of collateralisation.

The evaluation of counterparties and the credit risk classification takes place within the "credit assessment," which is performed by the Credit section. A quarterly internal rating benchmarking exercise with regards to external sources is performed and internal ratings are adjusted when deemed necessary.

Collateral recoverability is also part of the tests performed by the Credit Default Management Team.

The credit risk strategy is set in accordance with the Risk Management Policy and reported annually to the supervisory board. The credit risk strategy represents the framework and defines, amongst other things, the principles, credit risk appetite, the credit authorities, collateral eligibility, the basic counterparty quality, as well as the fundamental country and currency risk categories.

As previously mentioned, the general risk management structure, organisation, and process, and the risk strategy are described in [4. Risk management overview](#). As with credit risk, business directives for counterparty credit risk are stated in the credit risk strategy, which is set in accordance with the Risk Management Policy and reported annually to the supervisory board. The credit risk strategy sets the operating limits for counterparty credit exposure, which are regularly monitored as per the Credit Policy. Moreover, the Credit Policy defines the risk controlling (incl. wrong-way risk) and risk mitigation techniques.

10.4.8.1. Governance

In Clearstream Banking S.A., exposure to CCR arises from both over-the-counter (OTC) and centrally cleared derivatives.

As previously mentioned, the general risk management structure, organisation and process, and the risk strategy are described in [4. Risk management overview](#). As with credit risk, business directives for counterparty credit risk are stated in the credit risk strategy, which is set in accordance with the Risk Management Policy and reported annually to the supervisory board. The credit risk strategy sets the operating limits for counterparty credit exposure, which are regularly monitored as per the Credit Policy. Moreover, the Credit Policy defines the risk controlling (incl. wrong-way risk) and risk mitigation techniques.

Clearstream Banking S.A. is not generally involved in the derivatives business. CBL has modest derivatives positions to hedge interest rate or foreign exchange risk. There were limited positions in place at the end of 2022.

10.4.8.2. Measurement and Mitigation

Following points 114, 115, 116 and 117 of the guidelines on disclosure requirements, institutions are supposed to disclose information regarding the methods used to measure

the exposure value of instruments subject to capital requirements for CCR and a comprehensive picture of the institution's exposure to CCPs.

At Clearstream, derivative instruments are only used to a small extent, primarily for hedging purposes. Such instruments can only be used in established and regularly tested operational procedures. Hedging documentation is maintained to IAS 39 standards. The dealings with interest rate or foreign exchange risks (measurement, assignment of internal capital and limits, etc.) are described in detail in [12. Market risk](#).

In cases where a certain level of foreign exchange exposure, and therefore risk, is exceeded, the risk of each currency exposure should be hedged. For Clearstream, the level of materiality is expressed as 10% of consolidated EBITDA of the budget year to be hedged for each currency exposure. For the protection of Clearstream's budgeted interest income, the Treasury section may hedge the budgeted interest income for up to 50% of the client credit balances for the upcoming budget period(s) through approved hedging instruments. Foreign exchange outright contracts hedging the foreign exchange risk are settled via Continuous Linked Settlement (CLS)⁴ to minimise settlement risk and executed with counterparties only where a Credit Support Annex (CSA) is signed to mitigate credit risk resulting from market movements.

FX swaps are considered as a funding or an investment vehicle for currencies where no or limited deposit market exists (overnight swaps) or for the conversion of USD liquidity (overnight and/or term FX swaps) into EUR used to purchase/repo against highly liquid paper delivered to BCL serving as a liquidity buffer.

At the implementation of CRR2 CBL opted for Original Exposure Method (OEM) to calculate the counterparty credit risk from its FX derivatives transactions. In August 2022, CBL exceeded the absolute threshold set out in point (b) of Article 273a(2) CRR for three consecutive months. In replacement of OEM, the bank decided to apply standardised approach (SA-CCR). As the recognition of netting contracts is still in progress no netting at counterparty level or deduction of variation margins as collateral is applied. In application of Article 277 CRR, foreign exchange risk is recognised as the only material risk driver.

For securities financing transactions, which include the exposures arising from repurchase agreements and ASLplus transactions, Clearstream Banking S.A. opted to the usage of standardised approach for credit risk as per Chapter 2 Title II Part Three CRR rather than rather than specific provisions for counterparty credit risk as per Chapter 6 Title II Part Three CRR. However, the aforementioned exposures are included in the reporting templates dedicated to counterparty credit risk where relevant.

The following table discloses a comprehensive view of the methods used to calculate CCR regulatory requirements and the main parameters used within each method.

⁴ CLS (Continuous Linked Settlement): CLS is a global multi-currency settlement system that aims to eliminate foreign exchange (FX) settlement risk due to time-zone differences by settling both legs of an FX transaction simultaneously (payment vs. payment).

		a	b	c	d	e	f	g	h
	(in 000 of €)	Replacement cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre-CRM	Exposure value post-CRM	Exposure value	RWEA
EU-1	EU - Original Exposure Method (for derivatives)				1.4				
EU-2	EU - Simplified SA-CCR (for derivatives)				1.4				
1	SA-CCR (for derivatives)	10,018	32,113		1.4	58,984	58,984	58,984	22,631
2	IMM (for derivatives and SFTs)								
2a	Of which securities financing transactions netting sets								
2b	Of which derivatives and long settlement transactions netting sets								
2c	Of which from contractual cross-product netting sets								
3	Financial collateral simple method (for SFTs)								
4	Financial collateral comprehensive method (for SFTs)					48,268,071	313,020	313,020	190,349
5	VaR for SFTs								
6	Total					48,327,055	372,003	372,003	212,980

Template EU CCR1 – Analysis of CCR exposure by approach

The next table provides a summary of the CVA regulatory calculations.

(in 000 of €)		a	b
		Exposure value	RWEA
1	Total transactions subject to the Advanced method		
2	(i) VaR component (including the 3x multiplier)		
3	(ii) stressed VaR component (including the 3x multiplier)		
4	Transactions subject to the Standardised method	58,984	8,833
EU-4	Transactions subject to the Alternative approach [Based on the Original Exposure Method]		
5	Total transactions subject to own funds requirements for CVA risk	58,984	8,833

Template EU CCR2 – Transactions subject to own funds requirements for CVA risk

As per point 117 of the EBA Guidelines on the disclosure requirements for this report, the following table discloses a breakdown of CCR exposures by exposure class and by risk weight (riskiness attributed):

	Exposure classes	Risk weight											Total exposure value
		a	b	c	d	e	f	g	h	i	j	k	
	(in 000 of €)	0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others	
1	Central governments or central banks												
2	Regional government or local authorities												
3	Public sector entities												
4	Multilateral development banks												
5	International organisations												
6	Institutions					195,086	8,258						203,344
7	Corporates									166,309	2,350		168,659
8	Retail												
9	Institutions and corporates with a short-term credit assessment												
10	Other items												
11	Total exposure value					195,086	8,258			166,309	2,350		372,003

Template EU CCR3 – Standardised approach – CCR exposures by regulatory exposure class and risk weights

On 31 December 2022, the exposures to central counterparties were limited to default fund contribution as disclosed in the template EU CCR8 below.

		a	b
		Exposure value	RWEA
(in 000 of €)			
1	Exposures to QCCPs (total)		2,750
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which		
3	(i) OTC derivatives		
4	(ii) Exchange-traded derivatives		
5	(iii) SFTs		
6	(iv) Netting sets where cross-product netting has been approved		
7	Segregated initial margin		
8	Non-segregated initial margin		
9	Prefunded default fund contributions	18,705	2,750
10	Unfunded default fund contributions		
11	Exposures to non-QCCPs (total)		
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions); of which		
13	(i) OTC derivatives		
14	(ii) Exchange-traded derivatives		
15	(iii) SFTs		
16	(iv) Netting sets where cross-product netting has been approved		
17	Segregated initial margin		
18	Non-segregated initial margin		
19	Prefunded default fund contributions		
20	Unfunded default fund contributions		

Template EU CCR8 – Exposures to CCPs

In addition to the overall information on counterparty credit risk, Article 439 CRR also requires disclosure of risk mitigation concerning CCR as laid out in points 120 and 121 of EBA Guidelines on disclosure requirements under Part Eight of Regulation (EU) No 575/2013.

The collateral disclosed in the following template corresponds to the collateral received for reverse repurchase agreements and ASLplus business.

		a	b	c	d	e	f	g	h
		Collateral used in derivative transactions				Collateral used in SFTs			
Collateral type		Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received		Fair value of posted collateral	
		Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated
1	Cash – domestic currency								
2	Cash – other currencies								
3	Domestic sovereign debt								
4	Other sovereign debt						32,670,246		
5	Government agency debt						6,693,248		
6	Corporate bonds						1,830,098		
7	Equity securities								
8	Other collateral						8,666,796		
9	Total						49,860,389		

Template EU CCR5 – Composition of collateral for CCR exposures

On 31 December 2022, Clearstream Banking S.A. did not hold any credit derivatives on its books. Hence, the report does not include related templates.

10.4.9. Monitoring and Reporting

The credit risk team reports new credit lines and changes of credit lines – both increases as well as reductions – changes of the internal rating for clients, and credit exposures to Group

Risk Monitoring. Besides that, limit breaches – if any – are reported to the Executive Board and Group Risk Monitoring.

The reporting approach described under [4.11 Risk monitoring and reporting](#) also applies to the management of credit risk. On this basis, Group Risk Monitoring assesses the credit risk and reports VaR results as well as risk issues to the Executive Board. Besides the assessment of the VaR, Group Risk Monitoring also measures credit risk concentration and performs stress test calculations on credit risk (see [10.4.3 Stress testing](#)).

11. Liquidity risk

In application of point 4 of Article 451a CRR institutions shall disclose the arrangement, systems, processes and strategies put in place to identify, manage and monitor their liquidity risk. Qualitative information should be provided by using template LIQA below. To facilitate reading the relevant information is provided as free text in following chapters and LIQA templates contains the reference to the chapter where the required information is disclosed.

Row number	Qualitative information - Free format	Report chapter
(a)	Strategies and processes in the management of the liquidity risk, including policies on diversification in the sources and tenor of planned funding.	Chapters 11.1, 11.2, 11.3, 11.6, 11.7, 11.8, 11.9
(b)	Structure and organisation of the liquidity risk management function (authority, statute, other arrangements).	Chapters 11.1, 11.3
(c)	A description of the degree of centralisation of liquidity management and interaction between the group's units.	Chapters 11.1, 11.3
(d)	Scope and nature of liquidity risk reporting and measurement systems.	Chapters 11.1, 11.4, 11.5, 11.8
(e)	Policies for hedging and mitigating the liquidity risk and strategies and processes for monitoring the continuing effectiveness of hedges and mitigants.	Chapters 11.1, 12
(f)	An outline of the bank's contingency funding plans.	Chapters 11.1, 11.7.3
(g)	An explanation of how stress testing is used.	Chapters 11.1, 11.6, 11.7
(h)	A declaration approved by the management body on the adequacy of liquidity risk management arrangements of the institution providing assurance that the liquidity risk management systems put in place are adequate with regard to the institution's profile and strategy.	Chapter 11.9.1
(i)	<p>A concise liquidity risk statement approved by the management body succinctly describing the institution's overall liquidity risk profile associated with the business strategy. This statement shall include key ratios and figures (other than those already covered in the EU LIQ1 template under this ITS) providing external stakeholders with a comprehensive view of the institution's management of liquidity risk, including how the liquidity risk profile of the institution interacts with the risk tolerance set by the management body.</p> <p>These ratios may include:</p> <ul style="list-style-type: none"> · Concentration limits on collateral pools and sources of funding (both products and counterparties). · Customised measurement tools or metrics that assess the structure of the bank's balance sheet or that project cash flows and future liquidity positions, taking into account off-balance sheet risks which are specific to that bank. · Liquidity exposures and funding needs at the level of individual legal entities, foreign branches and subsidiaries, taking into account legal, regulatory and operational limitations on the transferability of liquidity. 	Chapters 4.1, 11.9.2, 11.5,

	Balance sheet and off-balance sheet items broken down into maturity buckets and the resultant liquidity gaps.	
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Table EU LIQA - Liquidity risk management

11.1. Liquidity Risk Overview

Clearstream's liquidity risk appetite represents the level of liquidity risk that Clearstream accepts in order to pursue its business objectives and in meeting its regulatory obligations. The risk acceptance criteria are translated into a limit system, and liquidity stress test scenarios are defined.

Regarding the limit systems and in addition to regulatory ratios, Clearstream has defined prudent internal limits to ensure conservative assumptions about a changing liquidity situation. These limits prohibit the creation of mismatch positions if there is a sudden or temporary decrease of available cash until this is permitted again by the liquidity risk exposure. Liquid assets should amount to at least a minimum percentage (depending on the currency or group of currencies) of the last 30-day average net client cash balances.

CBL Treasury Luxembourg performs CBL liquidity management and only relies on CBL own funding capacity, including committed funding lines set up by CBL with a wide range of liquidity providers and comprising liquidity funding capacity for all its relevant currencies.

CBL has also in place a dedicated contingency funding plan with a set of specific contingency measures tailored for CBL. The Liquidity Contingency Funding Plan describes:

- Roles and responsibilities;
- The Liquidity Risk Appetite;
- CBL balance sheet composition;
- Standard & exceptional liquidity generation measures;
- Liquidity saving measures;
- Escalation procedure;
- The review of the plan.

The hedging strategy and processes are described in the "Market risk" chapter.

Treasury Middle Office is responsible for issuing daily and monthly reports to CBL Executive Management and Clearstream Risk Management. Treasury Middle Office monitors daily limit observances and routinely reports breaches to CBL Executive Management and Clearstream Risk Management.

Liquidity stress tests are performed by Clearstream Risk Management, analysing whether enough sources are available to cover needs in stressed market conditions within a certain time frame. The design of a stress test scenario is such that the assumptions are extreme, but plausible. The stress tests are calculated daily and reported monthly to the Asset and

Liabilities Committee (ALCO). Based on the results, Treasury Front Office evaluates the adequacy of its liquidity providers and makes relevant adjustments, if necessary.

Following CSSF Circular 09/403, Clearstream has formulated its Clearstream Banking Liquidity Management Policy, which is approved by the Executive Board of Clearstream Banking S.A.. The liquidity parameters stated in this policy are reviewed quarterly by Treasury Middle Office.

The policy contains specific requirements to implement a liquidity risk strategy that includes contingency planning, governance and the definition of senior management responsibilities. Required changes are proposed for approval via the ALCO to CBL Executive Management within the annual update cycle or on ad-hoc basis if required.

Day-to-day implementation of the liquidity management strategy is the responsibility of the Head of Treasury Front Office, reporting the Key Performance Indicators (KPIs) to the member of the CBL Executive Board responsible for Treasury.

Clearstream Risk Management oversees the liquidity risk exposure from the second line of defence perspective validating the assessment, monitoring, and reporting activities. CBL's ALCO monitors and oversees those activities and makes recommendations to the Executive Board.

11.2. Strategy

As outlined in [Chapter 4.3](#), Clearstream has adopted a comprehensive risk strategy reflecting amongst others its appetite with regard to liquidity risks. The liquidity risk appetite represents the level of liquidity risk that Clearstream accepts in order to pursue its business objectives while meeting regulatory obligations. The risk acceptance criteria are translated into a limit system, and liquidity stress test scenarios are defined in accordance with the risk appetite.

Regarding the limit system and in addition to regulatory ratios, Clearstream has defined prudent internal liquidity limits to ensure conservative assumptions about a changing liquidity situation. These limits prohibit the creation of mismatch positions if there is a sudden or temporary decrease of available cash until this is permitted again by the liquidity risk exposure. Liquid assets should amount to at least a minimum percentage (depending on the currency or group of currencies) of the last 30-day average net client cash balances. Further details are outlined in [Chapter 11.5](#) below.

From an operational perspective, CBL's target for liquidity management is the ability to respond to daily, including intraday, changing client net long/short cash balances. Clients maintain cash balances with CBL and draw on credit facilities because of their securities settlement activities.

Concretely, the target for liquidity management is the ability to:

- Manage CBL's varying cash position because of client and own activity with the aim of having sufficient liquidity available in all currencies for a timely provision of domestic and cross-border settlement and payment services as they fall due, including liquidity management of cross-currency exposure where relevant;
- Keep intraday cash balances with nostro banks within the boundaries set by the liquidity risk tolerance and established concentration limits; and
- Have in place measures to deal with unexpected disruptions to its cash flows.

This is ensured by a permanent measurement, monitoring and control of the expected and actual cash flows.

CBL's investment strategy is driven by the cash amounts clients leave in their settlement accounts with CBL. To limit liquidity risk that may arise from investments, strict mismatch limits are established. Consequently, Treasury Front Office must invest funds with the objectives:

- To have sufficient liquid resources such as highly liquid collateral or investments readily available and convertible into cash to sustain liquidity risks under a wide range of potential stress scenarios, including intraday; and
- To have a maximum of liquidity available within one business day, including intraday, via overnight secured/unsecured placements and overnight foreign exchange swaps with creditworthy financial institutions, mostly executed after the client deadline towards the respective currency.

Due to the very short-term nature (mainly intraday) of CBL's obligations arising from its core settlement activities, there is no need for long term funding. CBL's liquidity requirements are intraday and overnight. However, to maintain a sufficient market presence for potential contingency situations, CBL has a multi-currency EUR 1 bn Euro Commercial Paper (ECP) program in place under which it permanently issues, mostly in USD and EUR currencies. Also, as mentioned above, clients maintain cash balances with CBL and may additionally draw on credit facilities (unconfirmed funds facility (UCF) and intraday technical overdraft facilities (i-TOFs)) as a result of their securities settlement activities. For EUR, USD, GBP, AUD and JPY, Treasury analyses the historical net client cash balance development to determine the minimum balance that is available for investments with a tenor exceeding overnight (Treasury mismatch limits).

11.3. Governance

Liquidity risk management is incorporated into Clearstream's governance set-up.

Treasury Front Office as first line of defence function performs the day-to-day liquidity risk management for Clearstream Banking S.A. (CBL).

Treasury Middle Office controls the activities of Treasury Front Office. The unit is responsible for the monitoring of internal liquidity metrics and daily limit observances, as well as the issuance of daily and monthly reports to the CBL Executive Management and Clearstream Risk Management, including ad-hoc communication of limit breaches.

Clearstream Risk Management oversees the liquidity risk exposure from the second-line of defence perspective, validating the assessment, monitoring, and reporting activities of the first line of defence. Also, Clearstream Risk Management is responsible for the performance of liquidity stress tests (please refer to [Chapter 11.6](#) for more details on stress testing).

CBL's Asset and Liability Committee (ALCO), a working group of the Clearstream Risk Committee, monitors and oversees all activities related to liquidity risk management and makes recommendations to the Executive Board.

The ultimate responsibility for the soundness and oversight of CBL's liquidity risk management lays with the Executive Board of CBL.

11.4. Liquidity risks (incl. intraday) measurement, monitoring and management: Article 40 of Regulation (EU) 2017/390

This chapter is added to meet the regulatory requirement stated in the Commission Delegated Regulation (EU) 2017/390 (DR 2017/390) Article 40 on public disclosure of a comprehensive qualitative statement that specifies how liquidity risks, including intraday liquidity risks are measured, monitored and managed.

CBL's liquidity requirements are mainly intraday and overnight. CBL is required to mitigate the liquidity risks arising from the provision of CSDR banking-type ancillary services with qualifying liquid resources (QLR) in each relevant currency. The minimum amount of CBL's available QLR (Cover 2 requirement – minimum requirement) shall at any time at least be sufficient to manage the risk to which CBL would be exposed following the default of at least two participants (including its parent undertakings and subsidiaries) towards which CBL has the highest exposures.

To address the CSDR related liquidity risk requirements, CBL has at its disposal the following QLRs as specified in Article 34 DR 2017/390:

- Own cash (uninvested CBL's own funds) deposited at the Central Bank of Luxembourg in a dedicated account separated from CBL's participant cash;
- Committed lines of credit or similar arrangements;
- Own assets funded with CBL's own funds; and
- Appropriated participant collateral in case of the participant's default.

All sources of liquidity risk are considered for the measurement, monitoring and management of CBL's liquidity (including intraday) which includes its relations to the entities and linked financial market infrastructures or other entities that may pose liquidity risk to its intraday liquidity flows, that is, Treasury counterparties, cash correspondent banks (CCBs), depositories, etc.

11.4.1. Measurement

For liquidity risk measurement, CBL has put in place effective operational and analytical tools to measure and compare on an ongoing basis its liquid resources to its liquidity needs (intraday, overnight, and multiday period). Concretely, the liquidity metrics required by DR 2017/390 Article 30(1), such as CBL's available qualifying and non-qualifying liquid resources, as well as additional internally defined metrics are measured on an ongoing basis

and used to calculate the appropriate value of intraday funding required. A prudent value of the liquid assets is assessed by considering their quality, concentration, immediate availability and market conditions. Intraday qualifying liquid resources are valued and calibrated under stressed market conditions including all stress scenarios referred to in DR 2017/390 Article 36(7).

For further details on CBL's measurement of liquidity risks, please also refer to Chapters [11.5 Liquidity metrics](#) and [11.6 Stress testing](#).

11.4.2. Monitoring

The operational and analytical tools used to measure liquidity risks (mentioned above) allow CBL to effectively monitor on a near to real-time basis its actual intraday liquidity positions against its expected activities and available resources based on balances and remaining intraday liquidity capacity. They also allow the monitoring of its intraday and overnight liquidity exposures on an ongoing basis against the maximum intraday liquidity exposure that has been historically recorded.

In practice, to monitor its actual cash balances held with its CCBs, depositories and central bank accounts, CBL captures intraday credit and debit advices received from its agents, intermediaries and central banks, and compiles intraday on a near to real-time basis the current actual available cash balances in its Intraday Liquidity Management tool.

This tool is also used by CBL to match its expected liquidity flows (participants' cash & securities settlement instructions and Clearstream's Treasury activities) against incoming and outgoing funds to ensure that expected balances and pending entries can be investigated. This operational and analytical Intraday Liquidity Management tool allows on an ongoing basis liquidity management at CBL CCBs, depositories and central banks. The tool produces management reports that support the intraday liquidity management process and issues intraday alerts in case defined intraday thresholds at CCB and currency levels are breached.

In addition, CBL runs daily extreme but plausible scenarios (including, but not limited to, those prescribed under CSDR) to identify and manage the risk of unexpected disruptions to its intraday liquidity flows. The liquidity stress tests model inter alia the liquidity risk resulting from the default of at least two participants to which CBL has the largest liquidity exposure.

11.4.3. Management

For each currency for which CBL acts as settlement agent, CBL estimates the intraday liquidity inflows and outflows for all banking-type ancillary services provided, anticipates the timing of these flows and forecasts the intraday liquidity needs that may arise at different periods during the day.

CBL's liquidity (including intraday) is managed by CBL's Treasury function per currency and per cash correspondent bank or depository acting as cash agent with the aid of an intraday liquidity management tool (ILM). ILM is capable to monitor CBL's actual cash flows as reported online by its cash correspondent banks / agents, and central banks, using standard Swift reporting capabilities, as well as CBL's expected forthcoming cash flows from its

clients, corporate actions or other activities such as payment flows. A real-time online overview of such flows combined with an automated alerting system ensures that Treasury can detect intraday unsecured exposure to CBL's cash correspondent banks / agents in excess of predetermined intraday concentration limits as well as intraday overdraft positions and take mitigating actions in due time. These measures aim to protect against liquidity risk which may arise from the temporary failure of a cash correspondent bank / agent or underlying participant. The online overview of flows allows to identify potential liquidity issues and escalate immediately if necessary.

CBL has arranged to acquire sufficient intraday funding to meet its intraday objectives, to manage the timing of its liquidity outflows and to deal with unexpected disruptions of its intraday liquidity flows.

In parallel, CBL assesses a prudent value of its liquid assets deemed sufficient for its intraday exposure by monitoring their quality, concentration, availability and by valuing its qualifying liquid resources under stressed market conditions. CBL has in place appropriate governance on the placement of its liquid assets. These are maintained in separate accounts under the direct management of the liquidity management function and may only be used as source of contingent funds during stress periods.

For managing its ability to provide sufficient liquidity to honour its liquidity management objectives (for more details see [Chapter 11.2 Strategy](#)), CBL has put ex-ante measures in place to control the required level of liquidity. A verification that all obligations have been met is done ex post. Any pending payment due to insufficient cash balance requires escalation.

CBL has intraday control procedures in place defining intraday liquidity management processes, timelines, thresholds for escalation to Management and crisis management system alerting the appropriate level of management depending on the seriousness of liquidity incidents.

CBL's liquidity management policy states the roles and responsibilities when facing a crisis event where day-to-day liquidity generation measures would not be sufficient to cover a liquidity shortage in one or several currencies. The liquidity issue would be escalated to CBL's Executive Board which can decide in view of the liquidity crisis event to activate exceptional liquidity generation measures listed in CBL's liquidity contingency funding plan.

11.5. Liquidity metrics

CBL manages its liquidity risk using both regulatory liquidity ratios (reflecting the normative perspective) as well as internally defined liquidity metrics (covering the economic perspective).

11.5.1. Regulatory liquidity ratios

For Clearstream Banking S.A., regulatory ratios have been defined by European and national laws.

11.5.1.1. Liquidity Coverage Ratio (LCR)

In accordance with Commission Delegated Regulation (EU) No 2015/61 (LCR DA) with regard to liquidity coverage requirements, CBL needs to hold a sufficient liquidity buffer of high-quality liquid assets (HQLA) to cover the net cash outflows in stressed conditions over thirty days. Reporting duties are monthly. The minimum ratio for CBL is 100%, with internal early warning and recovery indicator set respectively to 110% and 105%. In addition to monthly reporting to the regulator CBL monitors the ratio on daily basis.

The evolution of this ratio for the year 2022 as well as its components is presented in following template.

Scope of consolidation: solo		Total unweighted value (average)				Total weighted value (average)			
(in 000 of €)		T	T-1	T-2	T-3	T	T-1	T-2	T-3
EU 1a	Quarter ending on (DD Month YYYY)	31/12/2022	30/09/2022	30/06/2022	31/03/2022	31/12/2022	30/09/2022	30/06/2022	31/03/2022
EU 1b	Number of data points used in the calculation of averages	12	12	12	12	12	12	12	12
HIGH-QUALITY LIQUID ASSETS									
1	Total high-quality liquid assets (HQLA)					18,917,693	17,943,704	16,642,841	15,591,875
CASH - OUTFLOWS									
2	Retail deposits and deposits from small business customers, of which:	0	0	0	0	0	0	0	0
3	<i>Stable deposits</i>								
4	<i>Less stable deposits</i>								
5	Unsecured wholesale funding	19,238,222	18,045,765	16,403,933	15,322,755	18,382,810	17,228,969	15,556,552	14,486,993
6	<i>Operational deposits (all counterparties) and deposits in networks of cooperative banks</i>								
7	<i>Non-operational deposits (all counterparties)</i>	18,847,535	17,630,826	16,123,234	15,155,560	17,992,123	16,814,031	15,275,853	14,319,797

8	<i>Unsecured debt</i>	390,687	414,938	280,699	167,195	390,687	414,938	280,699	167,195
9	<i>Secured wholesale funding</i>	-				10	2,022	2,117	2,434
10	Additional requirements	204,306	153,230	117,569	110,669	204,306	153,230	117,569	110,669
11	<i>Outflows related to derivative exposures and other collateral requirements</i>	204,306	153,230	117,569	110,669	204,306	153,230	117,569	110,669
12	<i>Outflows related to loss of funding on debt products</i>								
13	<i>Credit and liquidity facilities</i>								
14	Other contractual funding obligations	122,540	113,549	107,374	105,083	90,632	86,909	80,167	77,556
15	Other contingent funding obligations	1,532,736	1,444,184	1,250,721	1,165,991	0	0	0	0
16	TOTAL CASH OUTFLOWS	-				18,677,759	17,471,129	15,756,405	14,677,652
CASH - INFLOWS									
17	Secured lending (e.g. reverse repos)	7,177,791	6,835,180	6,275,392	5,884,900	23,723	38,168	29,787	33,920
18	Inflows from fully performing exposures	1,848,076	1,720,732	1,494,141	1,478,581	1,843,898	1,717,154	1,489,659	1,471,638
19	Other cash inflows	340,548	248,641	229,968	220,143	102,092	92,462	88,186	80,464
EU-19a	(Difference between total weighted inflows and total weighted outflows arising from transactions in third countries where there are transfer restrictions or which are	-							

	denominated in non-convertible currencies]								
EU-19b	(Excess inflows from a related specialised credit institution)								
20	TOTAL CASH INFLOWS	9,366,415	8,804,552	7,999,501	7,583,623	1,969,713	1,847,783	1,607,633	1,586,021
EU-20a	<i>Fully exempt inflows</i>								
EU-20b	<i>Inflows subject to 90% cap</i>								
EU-20c	<i>Inflows subject to 75% cap</i>	9,366,415	8,804,552	7,999,501	7,583,623	1,969,713	1,847,783	1,607,633	1,586,021
TOTAL ADJUSTED VALUE									
EU-21	LIQUIDITY BUFFER					18,917,693	17,943,704	16,642,841	15,591,875
22	TOTAL NET CASH OUTFLOWS					16,708,046	15,623,346	14,148,772	13,091,631
23	LIQUIDITY COVERAGE RATIO					113.23%	114.85%	117.63%	119.10%

Template EU LIQ1 - Quantitative information of LCR

For the purposes of this disclosure the values of LCR elements are calculated as the simple averages of month-end observations over the twelve months preceding the end of each quarter.

In application of Article 451(2) CRR institutions shall provide qualitative information on LCR by using template EU LIQB. To facilitate the reading the relevant information is disclosed as free text below.

Row number	Qualitative information - Free format
(a)	Explanations on the main drivers of LCR results and the evolution of the contribution of inputs to the LCR's calculation over time
(b)	Explanations on the changes in the LCR over time
(c)	Explanations on the actual concentration of funding sources
(d)	High-level description of the composition of the institution's liquidity buffer.
(e)	Derivative exposures and potential collateral calls
(f)	Currency mismatch in the LCR
(g)	Other items in the LCR calculation that are not captured in the LCR disclosure template but that the institution considers relevant for its liquidity profile

Table EU LIQB on qualitative information on LCR, which complements template EU LIQ1.

Point (d)

Liquidity buffer of CBL is composed of following elements:

- Withdrawable reserves with central banks, mainly BCL;
- Securities in own investment portfolio;
- Securities received as collateral in reverse repurchase agreements.

CBL invests in extremely high-quality bonds issued by EU governments, public sector entities guaranteed by such governments, multilateral developments banks and international organisations that qualify for 0% risk weigh under CRR rules.

Under current treasury policy collateral accepted for reverse repurchase agreements also qualifies as high-quality liquid assets under Article 10 LCR DA.

Securities which were repledged in repurchase agreements are excluded from liquidity buffer.

Point (c)

The biggest part of outflows corresponds to the deposits made by CBL's clients as provision for their settlement activity. CBL places these funds in the market in as low risk a way as possible through on-balance sheet placements with central banks or cash corresponding

banks and securities financing transaction. Additional information on concentration of funding sources can be found in [Chapter 11.5.2.6](#).

Point (e)

Derivative exposures are arising from FX forwards and swaps used to mitigate FX risk. An additional outflow for derivatives based on variation margins is calculated using historical look back approach.

Point (g)

In application of Article 23 LCR DA CBL submits annual assessment of potential other outflows arising from other products. Main elements of this analysis are ASL business (see 10.4.6) and intraday overdraft facilities. However, these items do not create any material outflows.

Point (f)

The information on currency management is provided in [Chapter 11.5.2](#).

Points (a) and (b)

As the balance sheet of CBL is essentially short term the variation in the ratio is driven by the total size of the balance sheet. During 2022 the significant growth in client activity leading to the increase of the balance lead to the decrease of LCR: To mitigate this effect end of 2022 CBL issued commercial papers with longer maturities (up to six months) in order to increase available liquidity buffer. In addition, CBL launched a project to classify part of clients' positions as operational deposits from clearing, custody and settlement activities with the preferential outflow rate according to the provisions of Article 27 LCR DA. The model was approved by the Regulator and successfully implemented in January 2023.

11.5.1.2. Net Stable Funding Ratio (NSFR)

According to Article 6 (4) point (b) CRR, institutions authorised as CSDs according to Article 16 and point (a) of Article 54 (2) CSDR are exempted from the Net Stable Funding Ratio (NSFR) on an individual basis. As a result, CBL is exempt from reporting of the NSFR. The ratio is, however, reported on quarterly basis to the regulator on consolidated level by Clearstream Holding AG.

11.5.2. Internal liquidity metrics

To complement the regulatory liquidity ratios, several internal liquidity metrics are in place. These metrics are calculated using assumptions specific to the liquidity risk drivers inherent in CBL's business model.

11.5.2.1. Usage of uncommitted lines vs. committed lines

The "usage of uncommitted lines vs. committed lines" indicator sets thresholds for intraday liquidity usage. These thresholds represent the maximum intraday liquidity risk per currency that CBL tolerates.

Thresholds are based on the committed funding lines available in each currency and are represented in a color-coded alert system.

11.5.2.2. Mismatch limits

The mismatch limit defines the maximum net amount of assets and liabilities within a portfolio for trades with a tenor exceeding three business days. The mismatch limit for CBL is derived from the amount of client cash expected to be available on a permanent basis, thus limiting the liquidity risk. The methodology and its assumptions and parameters are described in detail in the Clearstream Banking Investment Policy.

Mismatch limits are defined for money market and investment portfolios. For all entities, the Treasury department reviews the mismatch limits quarterly.

11.5.2.3. Internal liquidity ratio I (liquid assets/net client cash)

The objective of the internal liquidity ratio I limit is to ensure a more dynamic adaptation to a changing liquidity situation. These limits prevent the new creation of mismatch positions by traders in cases of a sudden/temporary decrease of net client cash balances until this is permitted again by the liquidity risk exposure.

The basis for the calculation of the liquid assets and net client cash is the treasury operating system, in which all treasury transactions are recorded. Liquidity is calculated for EUR, USD, GBP, AUD and JPY and combined for EUR and USD.

The ratio is monitored daily by the Treasury Middle Office, an independent unit, and reported monthly to CBL Executive Management, Risk Management and the Head of Treasury. The ratio is the responsibility of the Head of Treasury, who acts as the secondary controlling body. During 2022, the internal liquidity ratio I was not breached.

On 31 December 2022, the internal liquidity ratio I was as follows:

Currencies	Ratio	Limits
EUR+USD	119%	>50%
EUR	178%	>50%
USD	73%	>60%
GBP	96%	>90%
AUD	130%	>90%
JPY	98%	>90%

Table 5: Internal liquidity ratio I

11.5.2.4. Internal liquidity ratio II (liquidity sources/client credit usage)

The objective of the internal liquidity ratio II is to ensure that liquidity sources provide sufficient liquidity to cover peak client end-of-day overdraft balances observed over the preceding two years. The ratio is calculated monthly.

During 2022, all ratios and limits were in line with the limits set in the Clearstream Banking Liquidity Management Policy. The internal ratio II on 31 December 2022 was reported as follows:

Currencies	Ratio	Limits
EUR+USD	599%	>200%

EUR	421%	>100%
USD	582%	>100%

Table 6: Internal liquidity ratio II

11.5.2.5. Liquidity buffer

Further, CBL has defined liquidity buffers in EUR, USD and GBP. The EUR liquidity buffer is the sum of cash held at the central bank, cash held with creditworthy financial institutions, and unencumbered assets/collateral readily available and convertible into cash. The USD and GBP liquidity buffers are composed of cash held with creditworthy financial institutions and unencumbered assets/collateral readily available and convertible into cash.

Minimum required liquidity buffers, and additionally target buffers, have been determined. Target buffers indicate the EUR equivalent liquidity amount which should constantly be available in each of the three currencies.

During 2022, the liquidity buffer was comfortably above the limits and targets as set in the Clearstream Banking Liquidity Management Policy.

Currency	Actual buffer (in EUR '000,000)	Minimum required liquidity buffer (in EUR '000,000)	Target liquidity buffer (in EUR '000,000)	Liquidity recovery option indicator (amber)	Liquidity recovery option indicator (red)
EUR	8,780	1,700	4,000	4,000	1,700
USD	4,244	1,000	1,900	1,900	1,000
GBP	500	150	250	250	150

Table 7: Clearstream Liquidity buffer as of 31 December 2022

11.5.2.6. Funding Source Concentration

To ensure that the overall risk exposure related to treasury investment activity remains within acceptable concentration limits, Group Credit as per the Credit Policy allocates credit limits for all approved investments for each counterparty and at the corresponding counterparty group level.

Also, to avoid excessive intraday cash concentration on its cash correspondent network, intraday cash concentration limits are set and constantly monitored. Intraday overstepping of cash concentration limits results in alerts to Treasury, which is responsible for day-to-day liquidity management, and requires immediate action to reduce the current cash concentration.

Treasury also ensures diversification of its liquidity sources by arranging multiple types of committed funding arrangements and ensuring a minimum number of liquidity providers for each main currency. Treasury Middle Office controls the concentration of liquidity providers via daily reporting and reports breaches to the CBL Executive Board.

11.6. Stress Testing

A variety of stress tests is used as the main control tool for liquidity risk from a second line of defence perspective.

A liquidity stress test is performed by identifying the liquidity needs arising in the event of a pre-defined stress event and analysing whether enough liquidity sources would be available to cover those needs within a given time frame. The design of a stress test scenario is such that the assumptions are extreme, but plausible.

CBL's Liquidity Stress Testing framework was designed to comply with the CSDR. The CSDR ensures that systemically important securities infrastructures are subject to common EU rules. In addition, Commission Delegated Regulation (EU) 2017/390 specifies the details of the frameworks and tools required as per CSDR for monitoring, measuring, managing, reporting, and publicly disclosing liquidity risks, including those that occur intraday. The key requirements on liquidity stress testing are described in Articles 35(5), 36(6) and 36(7) of Commission Delegated Regulation (EU) 2017/390.

The CSDR-compliant Liquidity Stress Testing model is forward-looking and considers all entities and products that may pose a material liquidity risk to CBL. It is calculated on combined and relevant currency level, whereby the liquidity exposures are tested against CBL's qualifying liquid resources (QLR). Ten different stress scenarios have been defined, eight of which are calculated on a daily basis, and two on a monthly basis. The stress scenarios were designed using different combinations of the requirements described in Article 35(5), 36(6) and 36(7) of Commission Delegated Regulation (EU) 2017/390. They comprise amongst others the default of the two clients with the largest intraday liquidity exposures (Cover 2) and the default of an important service provider.

As result of the stress tests, the end-of-day liquidity gap is derived per scenario and currency. It is defined as the relevant key risk indicator used to monitor the viability of CBL's business model under stressed conditions. The aim is to ensure a sufficient buffer of QLR under consideration of available liquidity sources and available committed FX swap lines.

If the liquidity stress tests result in breaches, that is, the liquidity needs could not be covered by available liquidity sources on a same-day basis, Clearstream Risk Management reports to the Asset and Liability Committee, a working group of CBL's Risk Committee. Based on the analysis provided by Clearstream Risk Management and the Banking Product unit, Treasury will review and adjust its contingency funding plan and/or funding plan, if required, and inform the Executive Board of CBL accordingly. Also, the adequacy of CBL's liquidity risk management framework and set of liquidity providers will be assessed considering the liquidity stress test results and their analysis and adjusted if necessary.

Throughout 2022, in the large majority of calculated liquidity stress scenarios, Clearstream had sufficient qualifying liquid resources to cover the identified liquidity need. Any potential liquidity gaps have been appropriately assessed and all necessary actions have been taken by Clearstream to prevent reoccurrence.

11.7. Risk mitigation

To meet its liquidity management objectives, CBL maintains several liquidity sources. Specifically, in compliance with CSDR, CBL has set up qualifying liquid resources (QLR). It is ensured that the minimum amount of available QLR is at any time at least sufficient to manage the risk to which CBL would be exposed following the default of at least two participants including its parent undertakings and subsidiaries towards which CBL has the largest exposures.

Further, CBL has defined liquidity buffers in EUR, USD and GBP. clients should refer to Chapter [11.5.2 Internal liquidity metrics](#) for further details.

To complement the permanent liquidity buffers, CBL has – amongst others – the following arrangements and measures in place to mitigate liquidity risks:

- A network of cash correspondent banks and depositories to support the funding requirements for CBL's settlement operations in more than 40 currencies via uncommitted, unsecured overdraft lines;
- A broad range of money market counterparties for both secured and unsecured funding;
- Procedures of prioritisation of payment obligations;
- Intraday procedures and tools to anticipate and forecast potential intraday liquidity shortfalls;
- A variety of medium-term and permanent liquidity sources (see [Chapters 11.7.1](#) and [11.7.2](#)); and
- Escalation and contingency funding procedures (see Chapter [11.7.3](#)).

To ensure that the overall risk exposure related to treasury investment activity remains within acceptable concentration limits, Group Credit as per the Credit Policy allocates credit limits for all approved investments for each counterparty and at the corresponding counterparty group level.

Furthermore, to avoid excessive intraday cash concentration on its cash correspondent network, intraday cash concentration limits are set and constantly monitored. Intraday overstepping of cash concentration limits results in intraday alerts to Treasury Front Office, which is responsible for day-to-day liquidity management and requires immediate action to reduce the current cash concentration.

Treasury Front Office ensures diversification of liquidity sources by arranging multiple types of intraday committed funding arrangements and ensuring a minimum number of liquidity providers for each relevant currency. Treasury Middle Office controls the concentration of liquidity providers via daily monitoring and reports breaches to the CBL Executive Board.

11.7.1. Medium-Term Liquidity Sources

Despite the very short-term nature of Clearstream's liquidity risk because of its core settlement activities, situations might arise where funding requirements exceed the usual maximum of 48 hours.

The following instruments are available for funding:

- EUR 1 bn multi-currency Euro Commercial Paper Program;
- BCL tender participation in EUR and USD;
- Repurchase agreements and committed repo funding lines (can be drawn in multiple currencies);
- Foreign exchange swaps and committed foreign exchange swap facilities (can be drawn in multiple currencies);
- Revolving credit facility (can be drawn in EUR, USD and GBP).

11.7.2. Permanent Liquidity Sources

Permanently available liquidity consists of CBL's own funds and the stable part of net client cash in EUR and USD currencies based on historical data, as follows:

- Based on historical data, the permanently available liquidity must be sufficient to cover all term investments (fixed and variable coupon bonds, CBL reverse repos) in all currencies for which a mismatch limit is set.
- The permanently available liquidity must be sufficient to cover all long-term investments.

At year-end 2022, the own funds amounted to EUR 1.008 bn.

11.7.3. Contingency Funding

Additional liquidity generation capabilities are available to face a contingency situation. These additional contingency funding capabilities and actions are listed below.

- Contingency liquidity generation capabilities:
 - EUR 750 mn revolving credit facility (including a EUR 400 mn intraday swing line);
 - Sale of client collateral (in the event of a client's default);
 - Liquidation/buy-in of securities for Clearstream Treasury repo transactions;
 - Sale and repo out of proprietary fixed coupon and/or FRN portfolio;
 - Committed FX Swap facilities (coverage in multiple currencies);
 - Marginal Lending Facility (EUR only);
 - Intra-Group funding.
- Other actions:
 - Cancellation of client UCF/TOF lines;
 - Flagging income and redemption proceeds "Upon Receipt of Funds" (URF);
 - Timed payments/prioritised payments.

11.8. Monitoring and Reporting

On a daily basis, CBL's liquidity risk exposure and breaches of limits are controlled and reported by Treasury Middle Office. Any limit excesses which occurred as part of Treasury activity are reported to CBL's Executive Management upon their detection. Also, any breach that occurred in daily liquidity stress tests is reported to the Chief Risk Officer and Asset and Liability Committee members on the day of the detection of the breach.

On a monthly basis, a summary of liquidity stress results is reported by Clearstream Risk Management via the Asset and Liability Committee to the Clearstream Risk Committee.

Further to this, the reporting approach laid out in [4.11. Risk monitoring and reporting](#) also applies to the management of Liquidity Risk, that is, liquidity risk exposures and limit breaches are included in the quarterly risk report to the Executive Management of CBL.

On an annual basis, the Internal Liquidity Adequacy Assessment Process (ILAAP) of Clearstream, defined at Clearstream Holding (CH) level, is reviewed and the corresponding ILAAP report is produced as a cross-unit effort (including first and second line of defence) under the lead of Clearstream Risk Management. The final report is reviewed amongst others by CBL Compliance, the Chief Risk Officer of CH and the Head of Risk Management of CBL, and then submitted to the relevant Executive Boards for approval, before its submission to the regulatory authorities. Internal Audit, as the third line of defence, reviews the ILAAP regularly.

11.9. Liquidity adequacy

Clearstream ensures the adequacy of its liquidity via the Internal Liquidity Adequacy Assessment Process (ILAAP), which stands next to the Internal Capital Adequacy Assessment Process (ICAAP) and ensures that Clearstream manages its liquidity position adequately within a holistic management framework and meets all payment obligations on time.

Liquidity adequacy is secured from two forward-looking perspectives complementing each other and forming an integrated management approach:

- From an economic perspective, Clearstream considers the specific features of the company business model and ensures that the expected outflows are executed in a timely manner.
- In the normative perspective, Clearstream manages its regulatory liquidity requirements by internal management buffers on top of regulatory limits as well as projections of regulatory ratios under economic stress assumptions.

The Executive Board is ultimately responsible for the soundness of the ILAAP, with a focus on:

- Ultimate responsibility for the liquidity adequacy statement as well as for the review and approval of the ILAAP;
- Review and approval of internal risk management documentation;
- Approval of the overall risk strategy and risk appetite;
- Approval of the risk quantification methodologies, including high-level risk measurement assumptions, parameters, data, and systems used;
- Approval of the risk identification process as well as the internal risk inventory and taxonomy;
- Approval of the stress testing framework;
- Ongoing review and approval of the monthly liquidity risk related reporting;
- Approval of the Liquidity Risk Management Framework ;
- Approval of the liquidity strategy and capital planning; and
- Overseeing the integration of internal capital and liquidity framework (ICAAP and ILAAP) into the Company.

The components are supported by objectives, assumptions, and methodologies, and are captured by clear, concise and consistent documentation approved by the Executive Management. To determine the required liquidity, the complete risk profile of CBL has been considered.

11.9.1. Liquidity risk adequacy declaration

The Executive Board of CBL approves and signs on an annual basis the liquidity risk adequacy statement, according to which CBL is compliant with the regulatory requirements having tools and measures in place to monitor, manage and report liquidity risk appropriately.

In 2022, CBL had excess liquidity on a daily basis, and no liquidity shortage occurred under business as usual conditions. In conclusion, CBL's liquidity is considered adequate to cover all identified risks related to liquidity.

11.9.2. Concise Liquidity Risk Statement

The business model of CBL, being a central securities depository, is highly dependent on client cash deposits, making CBL a liability-driven institution. The funding is mainly composed of short-term liabilities (that is, overnight and intraday client credit balances), own funds, funding raised to cover client debit balances, as well as funds raised in the money and capital markets to increase CBL's liquidity.

Associated with this business model is a liquidity risk profile that is strongly focused on short-term (mainly intraday) liquidity. The liquidity risk appetite is defined by the Executive Management, taking business needs, regulatory requirements as well as the overarching risk strategy and appetite into account. This liquidity risk appetite is translated into a limit system, providing boundaries for the day-to-day liquidity management in the first line of defence (see [Chapter 11.2](#)).

In compliance with CSSF Circular 09/403, a comprehensive liquidity risk management framework has been established at Clearstream group level, summarised in the Clearstream Banking Liquidity Management Policy. This policy is reviewed by the ALCO and approved by the Executive Boards of CBL and Clearstream Banking AG on an annual basis. It comprises inter alia the definition of liquidity parameters, contingency planning, governance and the definition of senior management responsibilities.

Within the established liquidity risk management framework, liquidity risks are measured, monitored and mitigated as described in [Chapter 11.4](#). Regulatory ratios are calculated and projected as part of the normative perspective, while internal liquidity metrics are defined to support the management of liquidity risks in the economic perspective. A qualitative and quantitative overview of these key ratios and metrics is provided in [Chapter 11.5](#).

Further to this, liquidity stress testing is used to test the sufficiency of CBL's liquidity resources in extreme but plausible scenarios. It is thus an important tool to address and appropriately manage the liquidity risk arising from CBL's business activities. Details can be found in [Chapter 11.6](#).

To ensure the continuous adequacy of CBL's liquidity risk management and reflect any relevant external / internal developments, CBL regularly reviews and adjusts its measurement, monitoring and management processes for liquidity risk.

This statement is approved as part of [general concise risk statement](#).

12. Market risk

In application of Article 435 CRR institutions shall disclose their strategies and processes to manage market risk using template EU MRA below. To facilitate the reading of the disclosures the relevant information is provided as free text in following chapters.

		Disclosures chapter
a	<p>Points (a) and (d) of Article 435 (1) CRR A description of the institution's strategies and processes to manage market risk, including:</p> <ul style="list-style-type: none"> - An explanation of management's strategic objectives in undertaking trading activities, as well as the processes implemented to identify, measure, monitor and control the institution's market risks - A description of their policies for hedging and mitigating risk and strategies and processes for monitoring the continuing effectiveness of hedges 	Chapters 12.1, 12.2
b	<p>Point (b) of Article 435 (1) CRR A description of the structure and organisation of the market risk management function, including a description of the market risk governance structure established to implement the strategies and processes of the institution discussed in row (a) above, and that describes the relationships and the communication mechanisms between the different parties involved in market risk management.</p>	Chapters 12.1, 12.2
c	<p>Point (c) of Article 435 (1) CRR Scope and nature of risk reporting and measurement systems</p>	Chapter 12.2

Template EU MRA: Qualitative disclosure requirements related to market risk

12.1. Market Risk Governance

As per the Clearstream Banking Investment Policy, CBL is not involved in proprietary trading activities and does not maintain a trading book. Market risks arise as currency risk in net positions in foreign currencies. It also arises as an interest-rate risk in the banking book, particularly from money market activities (mostly secured) and investments in securities as part of investment or short-term portfolios that are purchased with the intention to "buy and hold."

Clearstream's general structure, organisation and process of risk management and its risk strategy are described in the section [4. Risk management overview](#).

The Clearstream Banking Investment Policy sets the framework for hedging future currency risk and interest income. It includes the approved hedging instruments and the delegation of power for hedging interest income and foreign exchange risk. Any individual currency exposure exceeding the level of materiality has to be hedged.

The risk strategy is translated into a limit system, which is monitored daily. The Clearstream Banking Investment Policy defines limits, and responsibilities. Treasury Middle Office (hierarchically independent from Treasury Front Office) controls that all risk parameters set

in the investment policy are respected and directly reports to senior management breaches accordingly.

12.2. General Measurement

Besides the overall risk appetite calculated via VaR, interest rate risk is calculated on all positions under Treasury management, applying a predefined parallel shift on the yield curve. Interest rate risk on all positions under Treasury management is computed daily by applying a 1% parallel shift for the money market portfolio and a 2% parallel shift for the investment portfolio to the respective yield curve and assessing the effect on the net present value (NPV) of this portfolio.

In cases where Clearstream's budgeted interest income should be hedged, the effectiveness of potential hedges is measured, and the credit rating of the trade counterparties is regularly controlled.

Foreign exchange risk is controlled using a limit system. Since Clearstream has payables and receivables in foreign currencies, only the net exposure is relevant for the exposure calculation. In cases where a certain level of foreign exchange exposure is exceeded in a currency, the risk of this currency exposure should be hedged. For Clearstream, the level of materiality is expressed as 10% of the budget year's consolidated EBITDA to be hedged for each currency exposure. The effectiveness of potential foreign exchange risk hedges is measured, and the credit rating of the trade counterparties is regularly controlled.

Since Clearstream Banking S.A. calculates its market risk exposure for regulatory purposes according to the standardised approach, it is required to disclose its capital requirements according to point 127 of the EBA Guidelines in conjunction with Article 445 CRR. However, as previously mentioned, CBL does not maintain a trading book. Hence, CBL's only risk exposure – which is addressed in this chapter – is the foreign exchange risk in the banking book.

The information on FX risk stemming from currency position is provided in the following template:

	(in 000 of €)	RWEAs
	Outright products	43,785
1	Interest rate risk (general and specific)	
2	Equity risk (general and specific)	
3	Foreign exchange risk	43,785
4	Commodity risk	
	Options	-
5	Simplified approach	
6	Delta-plus approach	
7	Scenario approach	
8	Securitisation (specific risk)	
9	Total	43,785

Template EU MR1 - Market risk under the standardised approach

The split of the foreign exchange position is provided below:

(in 000 of €)	ALL POSITIONS		NET POSITIONS		POSITIONS SUBJECT TO CAPITAL CHARGE		TOTAL RWEA
	LONG	SHORT	LONG	SHORT	LONG	SHORT	
TOTAL POSITIONS	21,739,269	20,252,110	1,497,086	9,927	43,785		43,785
Currencies closely correlated	9,655,667	8,202,366	1,453,301				
of which: reporting currency			1,453,285				
All other currencies (including CIUs treated as different currencies)	12,083,602	12,049,744	43,785	9,927	43,785		

Table 8: Foreign exchange position as of 31 December 2022

12.3. Market Risk Mitigation

Market price risk can arise in connection with cash investments or borrowing because of fluctuations in interest rates, foreign exchange rates and other prices, as well as through corporate transactions. In the year under review, the expected foreign exchange exposure resulting from CBL's budgeted USD-based net interest income (NII) was hedged against a change in foreign exchange rate.

If a foreign exchange hedge is undertaken, testing of the effectiveness of hedging transactions is performed regularly in compliance with IFRS 9.

12.4. Monitoring & Reporting

Treasury Middle Office performs market risk control. Treasury Middle Office is responsible for monitoring compliance with limits and issues monthly reports to the relevant executive management and Group Risk Monitoring. Treasury Middle Office monitors exposures against limits daily and immediately reports excesses to executive management, Group Risk Monitoring and Treasury. This function is independent of the Treasury Front Office, which manages liquidity and executes transactions (liquidity management function).

12.5. Foreign Exchange Risk

Clearstream Banking S.A. transacts settlement and custody services business in more than 40 different currencies.

Clients maintain cash and securities accounts with CBL in those currencies in which they transact their business. Amounts in currency transmitted to CBL by clients are registered in the respective clients' account(s) in that currency. The same is true for any withdrawal of funds by clients (for example, for settlement purposes or custody payments).

Debits and credits of all clients in the same currency are held by CBL at its cash correspondent banks (CCBs). Clearstream Banking AG's net client positions are centrally reflected in CBL's overall position. Treasury analyses balances for each currency as a basis for placings. Where there is a requirement to fund net currency credit facilities, such takings are always made in the relevant currency. Therefore, concerning multi-currency settlement, CBL bears no material currency risk.

A limited amount of local currency is held at CBL representative offices in each location to cover expenses. Also, interest earned on currency placings above interest payable to clients on currency balances will cause (generally long) currency positions.

Additionally, Clearstream provides foreign exchange services to its clients. To remain within the approved limits set in the Clearstream Banking Investment Policy, foreign exchange risk resulting from the execution of client foreign exchange requests is covered daily in the foreign exchange market.

12.5.1. Foreign exchange risk measurement

Foreign exchange currency positions stemming from corporate activities and client foreign exchange transactions are covered via spot foreign exchange transactions. The Clearstream Banking Investment Policy defines the maximum open foreign exchange position allowed for all currencies. A report showing the foreign exchange positions in all currencies is produced daily. Treasury Middle Office (hierarchically independent from Treasury) controls the foreign exchange positions against the limit on a daily basis and reports any overstepping of the limit to the executive board. No overstepping was reported in 2022.

Forward foreign exchange transactions may be undertaken in anticipation of expected future exposures in foreign currencies to hedge the expected foreign exchange exposure resulting from CBL's budgeted USD based net interest income (NII). Hedge was performed in 2022.

12.5.2. Interest Rate Risk in the Banking Book

CBL's cash is placed and refinanced primarily through overnight secured reverse repos and placings with BCL in EUR currency and overnight foreign exchange swaps. In addition, CBL primarily purchases highly liquid and low-risk-weighted investments. The investment portfolio of CBL aims at capital preservation and providing core capital investment. Consequently, these portfolios are constructed to contain both market and credit risks and consist mainly of zero-risk-weighted debt securities.

Derivative instruments are not offered to clients. The use of derivative instruments is restricted to:

- Forward foreign exchange contracts that hedge or eliminate structural foreign exchange exposures.
- FX swap contracts to avoid large unsecured exposures with commercial banks and/or to convert available funds in one currency into another currency where funds are required to support the securities settlement efficiency.

Clearstream monitors currency and interest rate exposures daily using reporting generated by the general ledger accounting system and its client cash ledgers or the treasury ledger.

Clearstream's assets and liabilities are managed to contain interest rate risk (IRR) within limits established by the Clearstream Banking Investment Policy. Liabilities usually determine the structure of its assets. The close matching of investments and client deposits ensures that Clearstream can control its IRR.

The Clearstream Banking Investment Policy defines the maturity mismatch limits, the IRR sensitivity limits, and the maximum tenor for each currency or group of currencies. Limits are based on the IRR and the concepts of duration and gap. Duration means the remaining maturity of every deal on the asset and liability side. Gap means the IRR on the asset side

minus the IRR on the liability side. The IRR is calculated daily based on the net present value (NPV) of a 1% interest rate change for trades/instruments with a remaining life to maturity of less than one year and otherwise a 2% interest rate change.

	31 December 2022 (€' 000)				31 December 2021 (€' 000)			
	Mismatch/Portfolio		Interest Rate Risk (IRR)		Mismatch/Portfolio		Interest Rate Risk (IRR)	
	Exposure	Limit	Exposure	Limit	Exposure	Limit	Exposure	Limit
CBL Investment portfolio (Fixed and FRN)	1,558,115	2,500,000	63,509	72,000	1,487,016	2,500,000	67,456	72,000
CBL MM portfolio	559,804	5,800,000	763	18,000	344,861	5,800,000	560	18,000

Table 9: Mismatch limits

Based on requirements of Article 448 CRR CBL discloses the qualitative and quantitative information on interest rate risk in the banking book using templates IRRBB1 and IRRBBA below.

Supervisory shock scenarios		a	b	c	d
		Changes of the economic value of equity		Changes of the net interest income	
		Current period 31/12/22	Last period 30/09/2022	Current period 31/12/22	Last period 30/09/2022
1	Parallel up	(68,737,678)	(76,654,157)	(6,145,862)	(3,875,883)
2	Parallel down	34,372,441	39,777,274	6,145,862	13,596,535
3	Steeper	3,832,470	6,306,723		
4	Flattener	(35,414,515)	(36,886,017)		
5	Short rates up	(59,824,001)	(63,786,140)		
6	Short rates down	24,506,948	31,049,919		

Template EU IRRBB1 - Interest rate risks of non-trading book activities

Row number	Qualitative information - free format
(a)	<p>A description of how the institution defines IRRBB for purposes of risk control and measurement.</p> <p>Clearstream only engages in limited term transformation, assets and liabilities mainly have matching terms. Changes in interest rates may impact Clearstream's P&L. Hence, the interest rate risk (IRR) between interest-earning assets and interest-bearing liabilities shall be limited. Interest rate sensitive assets include Clearstream's money market and investment portfolios, while interest rate sensitive liabilities mainly consist of client assets in form of cash collateral, for which Clearstream grants its clients' interest.</p> <p>Such interest rates are in principle calculated based on a pre-defined benchmark rate per currency, complemented by a cash handling fee, while Clearstream obtains the realised interest rate from the investment of the cash collateral.</p> <p>For risk management purposes, the IRRBB is defined as the risk arising from interest rate changes which have an adverse impact on the Group's economic value and earnings. The risk is measured and monitored on a regular basis using a 99.9%-VaR Monte-Carlo simulation, ad-hoc shifts to the relevant curve as well as the EBA shock scenarios.</p>
(b)	A description of the institution's overall IRRBB management and mitigation strategies.

	<p>Strict IRR limits are established constraining the maximum market risk from potential adverse changes in market interest rates. IRR is calculated on the basis of the net present value (NPV) of a predefined yield change calculated for the remaining days to maturity or coupon reset.</p> <p>When calculating IRR, Clearstream applies a parallel shift of the yield curve (parameters are defined on the basis of historical movements in market yields and depending on remaining days to maturity) and assesses the resulting effect on the NPV of the portfolio on a daily basis. An IRR limit defines the maximum acceptable loss which can be caused by an adverse shift in the yield curve.</p>
(c)	The periodicity of the calculation of the institution's IRRBB measures, and a description of the specific measures that the institution uses to gauge its sensitivity to IRRBB.
	IRRBB calculation is performed on a quarterly basis for the purpose of regulatory reporting. However, the interest-rate risk assessment is performed monthly for internal purposes using a 99.9%-VaR Monte-Carlo Simulation simulating the change in relevant interest curves.
(d)	A description of the interest rate shock and stress scenarios that the institution uses to estimate changes in the economic value and in net interest income (if applicable).
	For the regulatory reporting, Clearstream follows the shock scenarios prescribed in the EBA guidelines. For internal purposes, a Monte-Carlo Simulation is performed. Hence, no specific shock is used in the base case. For ICAAP stress case assessment, we use a positive flat 363 basis points shock.
(e)	A description of the key modelling and parametric assumptions different from those used for disclosure of template EU IRRBB1 (if applicable).
	n/a
(f)	A high-level description of how the bank hedges its IRRBB, as well as the associated accounting treatment (if applicable).
	<p>IRR is being monitored and controlled by a set of limits and triggers. In case of interest rate risk limit or trigger being exceeded, a prompt review of the portfolio shall be conducted, and potential actions shall be decided.</p> <p>In order to limit essential IRR arising from the benchmark related compensation system, in exceptional cases such as, but not limited to, market disruptions, Clearstream reserves the right to calculate client interest rates on the basis of interest earned through the placement of funds instead of predefined benchmark rates if necessary.</p> <p>Treasury Middle Office monitors compliance with all limits stipulated in the Clearstream Treasury Policy on a regular basis, and issues regular reports to the Clearstream Executive Board and to Enterprise Risk Management. Identified limit excesses are reported immediately to Senior Management incl. Clearstream Executive Board Members responsible for Treasury and Risk.</p> <p>Considering that most of Clearstream exposures are overnight deposits and limited short-term treasury placements.</p>
(g)	A description of key modelling and parametric assumptions used for the IRRBB measures in template EU IRRBB1 (if applicable).
	Due to the plain vanilla structure of the items on our books, we do not overlay behavioural assumptions over the contractual features of the products. The EBA guidelines shock scenarios are used for reporting purposes.
(h)	Explanation of the significance of the IRRBB measures and of their significant variations since previous disclosures.
	The IRRBB measures are fairly stable over the reporting periods.
(i)	Any other relevant information regarding the IRRBB measures disclosed in template EU IRRBB1 (optional).
	n/a
(1) (2)	Disclosure of the average and longest repricing maturity assigned to non-maturity deposits.
	Due to the plain vanilla structure of the items on our books, we do not overlay behavioural assumptions over the contractual features of the products. Accordingly, all deposits are treated as overnight deposits for the purposes of IRRBB.

Template EU IRRBBA - Qualitative information on interest rate risks of non-trading book activities

13. Environmental, social and governance (ESG) risks

According to the provisions of Article 449a CRR, as of 28 June 2022, large institutions which have issued securities that are admitted to trading on a regulated market of any Member State shall disclose information on ESG risks, including physical risks and transition risks.

While qualifying as large institution due to O-SII status, Clearstream Banking S.A. is not a listed institution, and is wholly owned by Deutsche Börse Group AG. Neither shares nor debt securities issued by CBL are admitted to trading on any regulated markets.

In its communication to the CSSF dated 28 November 2022 CBL confirmed that it shall not be considered as a “listed institution” and therefore is not subject to ESG disclosures.

However, considering the growing importance of ESG risks, CBL has developed a comprehensive ESG strategy with five building blocks: Sustainable Finance Marketplace, Corporate Social Responsibility, ESG Products and Services, ESG Risk and Reporting and ESG Communication. Each block has measurable targets and clear next steps.

The Sustainable Finance Marketplace focuses on corporate social responsibility, ESG products and services, sound ESG risk management and ESG communication and capability-building. A dedicated Clearstream team has worked on an ESG competitive analysis, developed Clearstream ESG KPIs, and is planning to conduct further analysis to understand opportunities.

Corporate Social Responsibility is divided into four areas: Environment Friendliness, Responsible Employer, Corporate Governance and Community Engagement. A review of CBL and industry CSR activity was conducted and was followed by a proposal of a lighthouse project to focus further on CSR.

ESG Products and Services block offers a market infrastructure of choice for sustainable finance, providing access to financing across 60 markets and offering specific ESG products and services, such as reporting on markets or holdings. CBL has performed a client reach-out to identify ESG client needs and plans to conduct client interviews until the end of April 2023. Clearstream’s goal is to target clients with product feature, pricing, and return of client and make a decision on product evolution. CBL also plans to analyse client needs by segment.

The ESG Risk and Reporting block focuses on structured views on short-, mid-, and long-term ESG regulatory requirements and management of ESG risks as per reference from supervisory bodies on climate and environmental risks. CBL has identified priorities over time, such as integrating ESG risks into its Risk Strategy and conducting ESG stress testing. The next steps include the follow-up meeting with the CSSF regarding implementation of Circular No 21/773 on the Management of Climate-related and Environmental Risks.

Finally, ESG Communication focuses on formulating our ESG strategy and managing communication to stakeholder groups, both internal and external. CBL plans to kick-off on sustainability/white paper report creation. The next step is to create draft report as a starting point, assess existing publications and run first interviews with partners.

The ESG dedicated team has also proposed ESG KPIs to contribute to group-level targets in each of the five building blocks.

ESG Products and Services overall approach focuses on understanding ESG needs and preferences through client sounding within Securities Services (CSS) and Funds Services (CFS), by identifying stakeholders, conducting client questionnaires by business segment, and performing selected client interviews with a draft ESG product list. CBL will then shortlist product feature and development, define products with clear features and metrics to measure development progress, conduct cost analysis on the development and technology, develop new ESG product features, test ESG products with stakeholders, integrate ESG products within our ESG product portfolio, and finally launch three targeted products.

Finally, CBL plans to address several topics in its ESG report/white paper, such as the industry perspective for financial market infrastructures, fostering sustainable digitalisation as a market infrastructure, perspective on regulatory requirements, and Clearstream's ESG profile, including differentiating product features.

14. Remuneration

14.1. Remuneration Overview

The Remuneration Policy (“Policy”) is a central element for the implementation of the remuneration systems within the organisation. It is composed, in particular, according to Regulation (EU) No 2019/876 (“CRR 2”), Directive (EU) 2019/878 (“CRD V”), the EBA Guidelines 2015/22 on sound remuneration policies⁵, Law of 5 April 1993 on the financial sector (as amended) (“Luxembourg Law”), and related CSSF circulars. The Policy is regularly reviewed to ensure compliance with the latest regulations; the last review took place in June 2022.

The qualitative disclosures on remuneration policy should be provided using table EU REMA below. “Policy” refers to Remuneration Policy, “Report” – to annual Remuneration Report, “Pillar III” – to present disclosures.

Table EU REMA - Remuneration policy

Qualitative disclosures	Policy	Report	Pillar III
(a) Information relating to the bodies that oversee remuneration. Disclosures shall include: <ul style="list-style-type: none"> Name, composition and mandate of the main body (management body or remuneration committee as applicable) overseeing the remuneration policy and the number of meetings held by that main body during the financial year. External consultants whose advice has been sought, the body by which they were commissioned, and in which areas of the remuneration framework. A description of the scope of the institution's remuneration policy (eg by regions, business lines), including the extent to which it is applicable to subsidiaries and branches located in third countries. A description of the staff or categories of staff whose professional activities have a material impact on institutions' risk profile. 	1.2, 1.3	2	14.2
(b) Information relating to the design and structure of the remuneration system for identified staff. Disclosures shall include: <ul style="list-style-type: none"> An overview of the key features and objectives of remuneration policy, and information about the decision-making process used for determining the remuneration policy and the role of the relevant stakeholders. Information on the criteria used for performance measurement and ex ante and ex post risk adjustment. Whether the management body or the remuneration committee where established reviewed the institution's remuneration policy during the past year, and if so, an overview of any changes that were made, the reasons for those changes and their impact on remuneration. Information of how the institution ensures that staff in internal control functions are remunerated independently of the businesses they oversee. Policies and criteria applied for the award of guaranteed variable remuneration and severance payments. 	3.2	3.1, 3.2	14.2
(c) Description of the ways in which current and future risks are taken into account in the remuneration processes. Disclosures shall include an overview of the key risks, their measurement and how these measures affect remuneration.	3.1, 4.1	3.2, 3.4, 3.7	14.2
(d) The ratios between fixed and variable remuneration set in accordance with point (g) of Article 94(1) CRD.	3.6	3.3, 3.5	14.2
(e) Description of the ways in which the institution seeks to link performance during a performance measurement period with levels of remuneration. Disclosures shall include: <ul style="list-style-type: none"> An overview of main performance criteria and metrics for institution, business lines and individuals. An overview of how amounts of individual variable remuneration are linked to institution-wide and individual performance. Information on the criteria used to determine the balance between different types of instruments awarded including shares, equivalent ownership interest, options and other instruments. Information of the measures the institution will implement to adjust variable remuneration in the event that performance metrics are weak, including the institution's criteria for determining "weak" performance metrics. 	3.7, 3.8	3.5	14.3
(f) Description of the ways in which the institution seeks to adjust remuneration to take account of longterm performance. Disclosures shall include: <ul style="list-style-type: none"> An overview of the institution's policy on deferral, payout in instrument, retention periods and vesting of variable remuneration including where it is different among staff or categories of staff. Information of the institution' criteria for ex post adjustments (malus during deferral and clawback after vesting, if permitted by national law). Where applicable, shareholding requirements that may be imposed on identified staff. 	4.5	3.5.1, 3.5.2, 3.6	14.3
(g) The description of the main parameters and rationale for any variable components scheme and any other non-cash benefit <ul style="list-style-type: none"> Information on the specific performance indicators used to determine the variable components of remuneration and the criteria used to determine the balance between different types of instruments awarded, including shares, equivalent ownership interests, share-linked instruments, equivalent non cash-instruments, options and other instruments. 	3.6	3.5.1, 3.5.2	14.3
(h) Upon demand from the relevant Member State or competent authority, the total remuneration for each member of the management body or senior management.	Not required		
(i) Information on whether the institution benefits from a derogation laid down in Article 94(3) CRD in accordance with point (k) <ul style="list-style-type: none"> For the purposes of this point, institutions that benefit from such a derogation shall indicate whether this is on the basis of point (a) and/or point (b) of Article 94(3) CRD. They shall also indicate for which of the remuneration principles they apply the derogation(s), the number of staff members that benefit from the derogation(s) and their total remuneration, split into fixed and variable remuneration. 	Not applicable		
(j) Large institutions shall disclose the quantitative information on the remuneration of their collective management body, differentiating between executive and non-executive members in accordance with Article 450(2) CRR.		4.1, 4.2, 4.3	

⁵The revised Guidelines EBA/GL/2021/04 apply from 31 December 2021.

Following templates as EBA Guidelines are available in published [remuneration report](#) in Chapter 4.5:

- Template EU REM1 - Remuneration awarded for the financial year
- Template EU REM2 - Special payments to staff whose professional activities have a material impact on institutions' risk profile (identified staff)
- Template EU REM3 - Deferred remuneration
- Template EU REM4 - Remuneration of EUR 1 mn or more per year
- Template EU REM5 - Information on remuneration of staff whose professional activities have a material impact on institutions' risk profile (identified staff)

However, as the CRR disclosure requirements are fulfilled in the Remuneration Policy and annual Group Remuneration Report, this report only provides a summary of the key points and features of the Policy. For more detailed information, interested persons can refer to the [Clearstream Remuneration Policy](#)⁶ or the [Clearstream Group Remuneration Report](#)⁷.

14.2. Governance

The Remuneration Committee is set up by the Supervisory Board and responsible for advising the Supervisory Board on the remuneration policy. The following are members of the Remuneration Committee of Clearstream Banking S.A., Luxembourg:

Chairman	Stephan Leithner
Vice-Chairman	Gregor Pottmeyer
Member	Wolfgang Gaertner

Tasks and responsibilities:

- Supervises the reasonableness of the remuneration system of executive management members. In particular, it supervises the appropriateness of the compensation of the Head of the risk function and of the compliance function as well as employees having a substantial influence on the overall risk profile of the institution. It also supports the Supervisory Board in monitoring the reasonableness of the remuneration system of employees as well as the institution. At the same time, it assesses the impacts of the remuneration system on the risk, capital and liquidity management.
- Supports the Supervisory Board in overseeing the internal control system and all other relevant areas in the structuring of the remuneration system.

⁶ <https://www.clearstream.com/resource/blob/3163068/905c7f08a7bca9eedf5b7d6ec786d/clearstream-group-remuneration-policy-2022-ci-cbl-cs-data.pdf>

⁷ <https://www.clearstream.com/clearstream-en/about-clearstream/regulation-1-/remuneration-information>

Further details regarding the CBL Remuneration Committee, in particular its composition and tasks/responsibilities, are stipulated in the Clearstream Banking S.A. Supervisory Board Internal Rules & Regulations.

The Executive Board of Clearstream Holding AG as a superordinate company according to the German Banking Act (KWG) is responsible for the implementation of a Clearstream Group-wide policy. The Clearstream Group remuneration system including remuneration schemes and the respective Terms & Conditions of instruments, which apply to the respective categories of staff, is implemented according to a cascading process from Clearstream Holding AG at Group level down to entity level of inter alia Clearstream Banking S.A., especially taking into account the regulatory requirements of Luxembourg.

The Clearstream Group Remuneration Policy for Clearstream International S.A., Clearstream Banking S.A. and Clearstream Services S.A. (including their subsidiaries, branches and representative offices based in Luxembourg) provides the applicable framework for the design and implementation of the Remuneration systems for all employees of the Company.

The contents are the same across the Clearstream Group for all Companies unless there are relevant differences in the business model, the risk profiles or local requirements that justify a difference in individual case.

Clearstream Banking S.A. shall conduct an annual risk analysis to identify categories of staff whose professional activities have a material impact on the institution's risk profile ("Risk Takers") and to whom specific requirements apply according to the respective regulatory specifications, unless exemptions apply.

An employee is deemed to be identified as Risk Taker especially if one of the qualitative and appropriate quantitative criteria on the identification of Risk Takers set out in Regulation (EU) 2021/923 is met. In this respect and amongst others, the following categories of staff are identified as Risk Takers:

- All members of the Executive Board or Supervisory Board.
- Members of the senior management.
- Employees responsible and accountable to the management body for control activities of the independent risk management function, compliance function or internal audit function.
- Employees heading or having managerial responsibility and whose professional activities are deemed to have a material impact on risk profile of a material business unit.
- Employees heading a (control) function responsible for legal affairs, finance including taxation, budgeting and accounting procedures, human resources, remuneration policy, information technology (which is considered as a technology function), information security, the management of outsourcing arrangements, the prevention of money laundering and terrorist financing or economic analysis.
- Employees identified pursuant to quantitative criteria, for example, employees whose total Remuneration exceed criterions set out by regulation and whose professional activities are deemed to have a material impact on the institution's risk profile.

Within Clearstream Banking S.A., the Supervisory Board decides on the remuneration system for the members of the Executive Board. The Executive Board decides on the remuneration system of all employee groups except for members of the Supervisory Board and members of the Executive Board.

The remuneration system has been elaborated in cooperation with the relevant Clearstream Group's control units (that is, Risk Management, Compliance, Internal Audit and the Group Compensation Officer, in the following "Compensation Officer" and Deputy Group Compensation Officer, in the following "Deputy Compensation Officer"), taking into account Luxembourg specificities.

Within the Group, the competent functions of the consolidating institution and subsidiaries, including CBL, are supposed to interact and exchange information as appropriate.

If individual performance is determined, this shall be based on the achievement of a mix of quantitative/financial and qualitative/non-financial agreed goals, which shall be challenging and ambitious. The goals shall be consistent with the business and risk strategies, corporate values, risk appetite, long-term interests, as well as the cost of capital and the liquidity of the Group/Company.

The full amount of variable remuneration is subject to an ex-ante risk adjustment in the event of negative performance contributions, breach of duty and unconscionable conduct; it can be reduced to zero before the bonus award is made. The reduction shall not be compensated by positive performance contributions.

The performance of members of the Executive Board, Risk Takers and other employees is measured annually and documented and tracked in the respective appraisal systems. The performance assessment is executed by the respective line manager or, for members of the Executive Board, by the Supervisory Board.

The individual performance measurement is ensured through the respective appraisal systems.

The Policy is regularly reviewed to ensure compliance with the latest regulations; the last review took place in 2022 and reflects the revised requirements of CRD V and CRR II as adopted into national law.

The individual targets for Risk Takers in control units shall be independent from the performance of the business area they monitor and should not compromise their independence or create conflicts of interest in their advisory role.

To ensure that the remuneration parameters of Risk Takers in control units and the business units they monitor are not predominantly synchronised, targets only include the Group target achievement of Deutsche Börse Group as well as individual goals. The overall target achievement is measured by the Group target achievement of Deutsche Börse Group and by the individual goals, which are equally weighted.

Specifically, for Risk Takers in control units primarily control targets shall be set.

Guaranteed variable remuneration is exceptional and is only allowed in connection with the hiring of new staff, is limited to a maximum period of one year and subject to appropriate equity and liquid resources as well as sufficient capital in order to ensure the Company's Risk-Bearing Capacity

In general, severance payments are variable remuneration. Payments in connection with premature termination shall take due account of the performance over time and shall not reward falling short of performance expectations or misconduct following Article 38-6(h) Luxembourg Law.

The variable remuneration must not limit the Group's or CBL's ability to sustainably maintain or recover an appropriate capital base. If the Group's or CBL's ability to sustainably maintain or recover an appropriate suitable capital base is limited, no variable remuneration is to be granted. The total amount of the variable remuneration ("Total Amount") shall be determined in a formal, transparent and comprehensible process. Representatives of the relevant control units (for the determination of the bonus pool, performance criteria and remuneration awards) shall be involved within their scope of duties.

The Total Amount of variable remuneration is determined by summing up the actual individual variable remuneration that shall be awarded to all employees of the Company whereas such summed up amount is subject to the examination of side conditions, for example, on performance criteria derived from the Company's business and risk strategy in order to promote long-term sustainable success of the Company and to adequately reflect costs of capital and liquidity as well as risks incurred.

For the determination of the variable remuneration the target achievement on Company measurement level and the target achievement of the individual targets are multiplied with a risk adjustment factor. The risk adjustment factor is in general a combination based on the ratio of Value at Risk ("VaR") relative to the Available Risk Bearing Capacity ("ARBC") and the liquidity risk consideration reflecting the limits according to the respective risk strategy. In line with the Company's risk strategy, the VaR incorporates applicable risk types such as operational, financial and business risk as well as liquidity risk. The limit utilisation of each risk type (operational, financial, business and liquidity risk) is measured on a monthly basis, and evaluated using a traffic light system in accordance with the limits defined in the risk strategy. In the situation of a yellow or red traffic light, an assessment of the escalation process and mitigating measures (for example, capital allocation) is conducted to derive a potential reduction factor.

There shall be an appropriate ratio between the fixed and the variable remuneration. The variable remuneration may amount up to a maximum of 100% of the fixed remuneration. If national regulatory requirements allow the shareholders, owners or members of the institution to approve a ratio of 1:2 between the Fixed and Variable Remuneration components, the Variable Remuneration may amount up to a maximum of 200% of the Fixed Remuneration.

14.3. Performance link with remuneration levels

The Total Amount of the variable remuneration is based on a combination of the assessment of the performance of the overall result of the Group as well as individual goals including the area of responsibility. Details are stipulated in the respective remuneration scheme and the documentation of the determination of the Total Amount of variable remuneration.

The variable remuneration shall consider the overall performance of the Clearstream Group and, respectively, the institution, the performance of the areas of responsibility and individual performance contributions, with each measurement level generally equally weighted. The allocation of the variable remuneration components within the Company shall also consider all types of current and future risks. When assessing individual performance, financial and non-financial criteria are considered. Further, the assessment of the performance is set in a multi-year framework. The criteria for determining the variable remuneration shall be consistent with the objective of long-term sustainable performance. Details are stipulated in the remuneration scheme.

If the deferral rule applies, at least 50% of the deferred and non-deferred parts of the variable remuneration shall be linked to the Group's long-term performance. For this purpose, the corresponding parts of the variable remuneration shall be granted in the form of Deutsche Börse AG share-based remuneration (instruments). Exemption limits in accordance with regulatory requirements of the Company and the Group may apply.

If the deferral rule applies, a substantial portion – at least 50% – of any variable remuneration shall be in shares or equivalent share-linked instruments. Instruments shall be applied to both the deferred and non-deferred (upfront) portion of variable remuneration.

Guidelines for variable remuneration shall take due account of possible mismatches of performance and risk periods. Payments of variable remuneration shall be deferred as appropriate. Variable remuneration is not guaranteed, that is, all variable remuneration is based on a performance measurement and can be zero.

The pay-out schedules shall be sensitive to the time horizon of risks. If variable remuneration is paid, due account shall be taken of possible mismatches of performance and risk periods and it shall be ensured that payments are deferred as appropriate. If the deferral rule applies, at least 40% or respectively, 60% (depending on the category of Risk Taker or in the event of a variable remuneration of a high amount) of the variable remuneration component shall be deferred over a period that is no less than four to five years. Remuneration payable shall vest no faster than on a pro rata basis.

Further, a substantial portion – at least 50% – of any variable remuneration shall be in shares or equivalent share-linked instruments. Instruments shall be applied to both the deferred and non-deferred (upfront) portion of variable remuneration.

Before vesting, there is only an entitlement to an accurate determination of the respective part of the variable remuneration. Details, in particular the pay-out schedule, are stipulated in the remuneration scheme and the terms and conditions of instruments, in each case as applicable from time to time. Exemption limits in line with regulatory requirements of the Company and the Group may apply.

This neutralisation on the level of the individual relates to the pay-out of parts of variable remuneration in instruments and the deferral of parts of the variable remuneration.

The sustainability of the performance contributions of each Risk Taker, his/her area of responsibility as well as the overall performance of the Company will be considered. Moreover, the financial situation of the Company, in particular significant changes in the capital base, decreases in the financial capacity and the risk-bearing capacity will be taken into account (back-testing).

In the event of a negative back-test, malus can apply to all elements: the cash portion as well as share-based portions of deferred remuneration, in case of evidence of misbehaviour or serious error (for example, breach of code of conduct and other internal rules, especially concerning risks), negative performance contributions, significant failure of risk management respectively significant changes in the capital base or significant downturn in the financial performance. If the circumstances described above have occurred to a significant degree, a reduction or forfeiture of portions of the deferred variable remuneration including the share-based instruments applies.

The regulations on adjustment of variable remuneration are complemented through the implementation of repayment obligations for Risk Takers in accordance with regulatory requirements (so-called "Clawback"). In the event of a significant involvement in or the responsibility for a behaviour which led to a significant loss for the Company or to a major regulatory sanction, or a severe breach of relevant external or internal regulations concerning standards of suitability and conduct has been carried out, the respective Risk Taker is obliged to repay any variable remuneration already paid out respectively any claim to payment of variable remuneration shall lapse.

In addition to the share-based components already mentioned for identified Risk Takers, there are no shareholding requirements.

For more detailed information we refer to the additional [Clearstream Group Remuneration Report](#) mentioned above, which will be published on the Clearstream website.

Appendix A

Following template provides the information on full country-specific/geographic distribution of credit exposures that are relevant for the countercyclical buffer.

	a	b	c	d	e	f	g			j	k	l	m
							Own fund requirements						
	General credit exposures		Relevant credit exposures – Market risk		Securitisation exposures Exposure value for non-trading book	Total exposure value	Relevant credit risk exposures - Credit risk	Relevant credit exposures - Market risk	Relevant credit exposures - Securitisation positions in the non-trading book	Total	Risk-weighted exposure amounts	Own fund requirements (%)	Countercyclical buffer rate (%)
	Exposure value under the standardised approach	Exposure value under the IRB approach	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for internal models									
010 Breakdown by country:													
Other Countries	16,618,153					16,618,153	1,329,452			1,329,452	16,618,153	3.93%	
ANDORRA	5,458					5,458	437			437	5,458	0.00%	
UNITED ARAB EMIRATES	928,591					928,591	74,226			74,226	927,826	0.22%	
ARMENIA	36,242					36,242	2,899			2,899	36,242	0.01%	
ARGENTINA	18,428					18,428	2,211			2,211	27,643	0.01%	
AUSTRIA	101,739					101,739	8,139			8,139	101,739	0.02%	
AUSTRALIA	2,145,961					2,145,961	171,677			171,677	2,145,962	0.51%	
BDOSNIA AND HERZEGOVINA	2,397					2,397	192			192	2,397	0.00%	
BELGIUM	7,292,230					7,292,230	585,876			585,876	7,329,455	1.73%	
BAHRAIN	86,045					86,045	6,884			6,884	86,045	0.00%	
BERMUDA	127,748					127,748	10,220			10,220	127,748	0.00%	
BRUNEI DARUSSALAM	3,223					3,223	258			258	3,223	0.00%	
BRAZIL	27,787					27,787	3,334			3,334	41,680	0.01%	
BAHAMAS	1,287					1,287	103			103	1,287	0.00%	
CANADA	1,339,167					1,339,167	107,133			107,133	1,339,167	0.32%	
SWITZERLAND	2,936,039					2,936,039	235,823			235,823	2,947,789	0.70%	
CHILE	40,353					40,353	3,228			3,228	40,353	0.01%	
CHINA	3,748					3,748	424			424	5,208	0.00%	
COLOMBIA	21,606					21,606	1,728			1,728	21,606	0.01%	
COSTA RICA	69,621					69,621	5,570			5,570	69,621	0.02%	
CURCAO	23,195					23,195	1,856			1,856	23,195	0.01%	
CYPRUS	5,330,801					5,330,801	426,464			426,464	5,330,801	1.26%	
CZECH REPUBLIC	1,307,223					1,307,223	104,578			104,578	1,307,223	0.31%	1.50%
GERMANY	24,657,662					24,657,662	1,972,613			1,972,613	24,657,662	5.82%	
DENMARK	98					98	8			8	98	0.00%	2.00%
DOMINICAN REPUBLIC	49,709					49,709	3,977			3,977	49,709	0.01%	
ECUADOR	13,559					13,559	1,085			1,085	13,559	0.00%	
EGYPT	76,560					76,560	6,125			6,125	76,560	0.02%	
SPAIN	643,056					643,056	51,445			51,445	643,057	0.15%	
FINLAND	1,637					1,637	131			131	1,637	0.00%	
FRANCE	17,785,405					17,785,405	1,422,887			1,422,887	17,786,091	4.20%	
UNITED KINGDOM	20,749,424					20,749,424	1,072,307			1,072,307	15,403,838	1.00%	1.00%
GEORGIA	2,550,748					2,550,748	204,060			204,060	2,550,748	0.60%	
GUERNSEY	20,561					20,561	1,645			1,645	20,561	0.00%	
GIBRALTAR	2,930					2,930	234			234	2,930	0.00%	
GREECE	33,975					33,975	2,718			2,718	33,976	0.01%	
GUATEMALA	19,405					19,405	1,552			1,552	19,405	0.00%	
HONG KONG	144,569					144,569	11,525			11,525	144,062	0.03%	1.00%
INDONESIA	225,957					225,957	19,248			19,248	240,596	0.06%	
IRELAND	2,636,348					2,636,348	210,908			210,908	2,636,348	0.62%	
ISRAEL	4,140					4,140	331			331	4,140	0.00%	
ISLE OF MAN	53,441					53,441	4,275			4,275	53,441	0.01%	
INDIA	10,364					10,364	829			829	10,364	0.00%	
ITALY	20,871,369					20,871,369	1,670,463			1,670,463	20,880,781	4.93%	
JERSEY	562,075					562,075	45,324			45,324	566,556	0.13%	
JAPAN	156,620					156,620	12,530			12,530	156,620	0.04%	
KENYA	5,751					5,751	460			460	5,751	0.00%	
REPUBLIC OF KOREA	595,229					595,229	47,618			47,618	595,229	0.14%	
KUWAIT	111,043					111,043	8,883			8,883	111,043	0.03%	
CAYMAN ISLANDS	27,631					27,631	2,210			2,210	27,631	0.01%	
KAZAKHSTAN	719,075					719,075	57,526			57,526	719,075	0.17%	
LEBANON	78,247					78,247	9,390			9,390	117,371	0.03%	
SRI LANKA	3,775					3,775	453			453	5,662	0.00%	
LUXEMBOURG	82,358,794					82,358,794	6,631,677			6,631,677	82,895,966	19.58%	0.50%
LATVIA	48,360					48,360	3,869			3,869	48,360	0.01%	
LIBYA	13,592					13,592	1,087			1,087	13,592	0.00%	
MOROCCO	3,390					3,390	271			271	3,390	0.00%	
MONACO	20,933					20,933	1,675			1,675	20,933	0.00%	
NORTH MACEDONIA	7,841					7,841	627			627	7,841	0.00%	
MACAO	80,154					80,154	6,412			6,412	80,154	0.02%	
MALTA	10,058					10,058	805			805	10,058	0.00%	
MEXICO	1,600					1,600	128			128	1,600	0.00%	
MALAYSIA	3,635,773					3,635,773	290,862			290,862	3,635,773	0.86%	
NETHERLANDS	1,828,609					1,828,609	146,289			146,289	1,828,609	0.43%	
NORWAY	14,256					14,256	1,141			1,141	14,256	0.00%	2.00%
OMAN	40,395					40,395	3,232			3,232	40,395	0.01%	
PANAMA	38,894					38,894	3,111			3,111	38,894	0.01%	
PERU	23,882					23,882	1,911			1,911	23,882	0.01%	
PHILIPPINES	602,150					602,150	48,172			48,172	602,150	0.14%	
POLAND	28,845					28,845	2,308			2,308	28,845	0.01%	
PUERTO RICO	3,887					3,887	311			311	3,887	0.00%	
PORTUGAL	64,822,651					64,822,651	5,185,812			5,185,812	64,822,651	15.31%	
QATAR	281,389					281,389	22,511			22,511	281,389	0.07%	
ROMANIA	5,737					5,737	459			459	5,737	0.00%	0.50%
RUSSIAN FEDERATION	2,679,509					2,679,509	214,361			214,361	2,679,509	0.63%	
SAUDI ARABIA	349,540					349,540	27,963			27,963	349,540	0.08%	
SWEDEN	975,804					975,804	78,064			78,064	975,804	0.23%	1.00%
SINGAPORE	677,931					677,931	54,234			54,234	677,931	0.16%	
SLOVENIA	36,589					36,589	2,927			2,927	36,589	0.01%	
SAN MARINO	26,555					26,555	2,124			2,124	26,555	0.01%	
EL SALVADOR	3,496					3,496	419			419	5,243	0.00%	
THAILAND	2,822,109					2,822,109	225,769			225,769	2,822,109	0.67%	
TRINIDAD AND TOBAGO	49,386					49,386	3,951			3,951	49,386	0.01%	
TAIWAN	1,517,493					1,517,493	121,399			121,399	1,517,493	0.36%	
UKRAINE	2,357,150					2,357,150	282,858			282,858	5,535,725	0.84%	
UNITED STATES	130,689,570					130,689,570	10,455,162			10,455,162	130,689,530	30.87%	
URUGUAY	168,535					168,535	13,483			13,483	168,535	0.04%	
VENEZUELA	651,440					651,440	60,676			60,676	758,444	0.18%	
VIRGIN ISLANDS	296,646					296,646	23,732			23,732	296,646	0.07%	
VIET NAM	2,202					2,202	176			176	2,202	0.00%	
SOUTH AFRICA	271,561					271,561	21,725			21,725	271,561	0.06%	
020 Total	428,724,124	0	0	0	0	428,724,124	33,867,167	0	0	33,867,167	423,339,584	97.82%	

Appendix B

Following template provides the information on full geographical breakdown of performing and non-performing exposures.

	(in 000 of €)	a	b		c	d	e	f	g
		Gross carrying/nominal amount	Of which non-performing		Of which subject to impairment	Accumulated impairment	Provisions on off-balance-sheet commitments and financial guarantees given	Accumulated negative changes in fair value due to credit risk on non-performing exposures	
				Of which defaulted					
010	On-balance-sheet exposures	17,162,170	134,943	-	17,162,170	(134,742)			
020	Andorra	5	-	-	5	-			
030	United Arab Emirates	843	-	-	843	-			
040	Armenia	57	-	-	57	-			
050	Argentina	3,776	-	-	3,776	-			
060	Austria	1,784	-	-	1,784	-			
070	Australia	571,226	-	-	571,226	-			
080	Bosnia and Herzegovina	2	-	-	2	-			
090	Bangladesh	69	-	-	69	-			
100	Belgium	245,115	1	-	245,115	(0)			
110	Bulgaria	418	-	-	418	-			
120	Bahrain	133	-	-	133	-			
130	Bermuda	128	-	-	128	-			
140	Brunei	3	-	-	3	-			
150	Brazil	126	14	-	126	(4)			
160	Bahamas	2	-	-	2	-			
170	Canada	265,637	12	-	265,637	(9)			
180	Switzerland	28,060	25	-	28,060	(1)			
190	Chile	40	-	-	40	-			
200	Cameroon	1	-	-	1	-			
210	China	3,574	3	-	3,574	(0)			
220	Colombia	22	-	-	22	-			
230	Costa Rica	70	-	-	70	-			
240	Cabo Verde	1	-	-	1	-			
250	Curaçao	23	-	-	23	-			
260	Cyprus	195	-	-	195	-			
270	Czechia	1,681	-	-	1,681	-			
280	Germany	1,202,592	1	-	1,202,592	(0)			
290	Denmark	1,319	0	-	1,319	(0)			
300	Dominican Republic	50	-	-	50	-			
310	Algeria	75	-	-	75	-			
320	Ecuador	14	-	-	14	-			
330	Estonia	51	-	-	51	-			
340	Egypt	77	-	-	77	-			
350	Spain	9,712	-	-	9,712	-			
360	Finland	103	-	-	103	-			
370	Fiji	1	-	-	1	-			
380	France	1,001,180	89	-	1,001,180	(248)			
390	United Kingdom	2,740,762	168	-	2,740,762	(69)			
400	Georgia	2,559	-	-	2,559	-			
410	Guernsey	83	5	-	83	(4)			
420	Gibraltar	3	-	-	3	-			
430	Greece	529	1	-	529	(0)			
440	Guatemala	19	-	-	19	-			
450	Hong Kong	11,430	5	-	11,430	(5)			
460	Croatia	265	-	-	265	-			
470	Hungary	194	-	-	194	-			
480	Indonesia	14,777	12	-	14,777	(0)			
490	Ireland	61,364	15	-	61,364	(14)			
500	Israel	2,151	-	-	2,151	-			
510	Isle of Man	55	-	-	55	-			
520	India	154	-	-	154	-			
530	Iran	37	-	-	37	-			
540	Iceland	10,204	-	-	10,204	-			
550	Italy	3,275	16	-	3,275	(8)			

560	Jersey	278	4		278	(2)	
570	Jordan	18	-		18	-	
580	Japan	133,214	-		133,214	-	
590	Kenya	6	-		6	-	
600	Korea	380	-		380	-	
610	Kuwait	111	0		111	(0)	
620	Cayman Islands	124	0		124	(0)	
630	Kazakhstan	722	0		722	(0)	
640	Lao People's Democratic Republic	1	-		1	-	
650	Lebanon	78	-		78	-	
660	Liechtenstein	188	-		188	-	
670	Sri Lanka	4	-		4	-	
680	Lithuania	3	-		3	-	
690	Luxembourg	8,576,990	308		8,576,990	(147)	
700	Latvia	233	-		233	-	
710	Libya	168	-		168	-	
720	Morocco	153	-		153	-	
730	Monaco	72	-		72	-	
740	Montenegro	1	-		1	-	
750	North Macedonia	15	-		15	-	
760	Mongolia	1	-		1	-	
770	Macao	217	-		217	-	
780	Mauritania	2	-		2	-	
790	Malta	148	-		148	-	
800	Maldives	6	-		6	-	
810	Mexico	6,024	-		6,024	-	
820	Malaysia	3,665	-		3,665	-	
830	Netherlands	21,162	-		21,162	-	
840	Norway	344,288	-		344,288	-	
850	New Zealand	39,896	-		39,896	-	
860	Oman	41	1		41	(1)	
870	Panama	43	-		43	-	
880	Peru	24	-		24	-	
890	Philippines	684	-		684	-	
900	Poland	560	-		560	-	
910	Puerto Rico	4	-		4	-	
920	Portugal	277	-		277	-	
930	Qatar	187	-		187	-	
940	Romania	112	-		112	-	
950	Serbia	23	-		23	-	
960	Russian Federation	136,764	134,080		136,764	(134,080)	
970	Saudi Arabia	239	-		239	-	
980	Sweden	625	-		625	(0)	
990	Singapore	130,416	4		130,416	(0)	
1000	Slovenia	120	-		120	-	
1010	Slovakia	150	-		150	-	
1020	San Marino	34	-		34	-	
1030	Senegal	2	-		2	-	
1040	El Salvador	3	-		3	-	
1050	Thailand	2,824	-		2,824	-	
1060	Tunisia	19	-		19	-	
1070	Türkiye	6,897	-		6,897	-	
1080	Trinidad and Tobago	49	-		49	-	
1090	Taiwan	1,601	-		1,601	-	
1100	Ukraine	21	-		21	-	
1110	United States of America	1,078,434	7		1,078,434	(6)	
1120	Uruguay	246	-		246	-	
1130	Vatican	119	-		119	-	
1140	Venezuela	810	161		810	(124)	
1150	Virgin Islands	9	9		9	(9)	
1160	Viet Nam	11	5		11	(4)	
1170	Vanuatu	2	-		2	-	
1250	South Africa	102	-		102	-	
1270	Other countries	486,526	-		486,526	(6)	

1280	Off-balance-sheet exposures	1,385,230	-	-				
1290	Italy	6,300						
1300	United Kingdom	819,924						
1310	France	332,252						
1320	Spain	98,569						
1330	Germany	121,170						
1340	Belgium	6,537						
1350	Australia	479						
1360	Total	18,547,400	134,943	-	17,162,170	(134,742)		

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